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and
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The Outlook

The Case for the Flying-boat

VACILLATION in policy has been responsible for the somewhat jerky progress of British flying-boat design from 1912 onwards. Technical difficulties have also played a part, although to a smaller degree. Flying-boats did good work in the 1914-18 war, in spite of the shortcomings inseparable from the relative primitiveness of their design. But after that war the authorities responsible for policy did not appear to know their own minds for more than a few months at a time. Experimental boats were built, to be sure, but no substantial orders were placed. The Supermarine Southamptons were ordered in small numbers for the R.A.F., but from then onwards the Air Ministry could not seem to come to any definite decision. At one moment it wanted flying-boats, and the next it became lukewarm or even indifferent so far as the R.A.F. was concerned.

The first bold step was taken when a batch of Empire civil boats was ordered from Shorts for Imperial Airways. These boats have given excellent service, with their descendants the Sunderlands, Sandringhams and others. The war hit British flying-boat development, as it hit that of landplane transports, by compelling the industry to concentrate on bombers and fighters. This journal has been a staunch advocate of the flying-boat since the earliest days, and it must be confessed that there have been times when we began to wonder whether our flying-boat enthusiasm was another instance of "everyone being out of step except our John." Official apathy at times made the fight for the flying-boat appear fairly hopeless. Then came the announcement that Saunders-Roe had been given an order for a 300,000-lb civil flying-boat, an indication that at long last the voices of the few who had been crying in the wilderness had penetrated to the inner sanctum of those who direct policy. The official wobbling over the Short Shetland had almost threatened the extinction of the flying-boat, but here was proof that officialdom had not after all dared neglect its development.

Two papers have been read recently which argue the case for the flying-boat extremely well. Space considerations have prevented us from publishing summaries, but we hope to do so in the near future. One was the Thomas Lowe Gray lecture, read by Mr. Henry Knowler, chief designer to Saunders-Roe, before the Institution of Mechanical Engineers, and the other was given to the Air Transport Section of the American Institute of the Aeronautical Sciences by Mr. Peter Masefield, Director-General of Long-Term Planning and Projects at the Ministry of Civil Aviation. Mr. Knowler dealt with the technical problems in detail, and to a considerable extent with the operational and economic. He came to the conclusion, not unnaturally, that there is very definitely a future for the large flying-boat.

It might be argued that Mr. Knowler is an "interested party"; he obviously is. But Mr. Masefield may be assumed to be entirely impartial. His task is to examine all air transport possibilities and to judge them on their merits. If, therefore, he comes to the same conclusions as Mr. Knowler, which he does, not only does the argument for the large flying-boat become very strong, but it must be assumed that performance will follow precept at the Ministry of Civil Aviation, and that the Saro S.R. 45 will not be the end of the story.

The Basic Question

CLOSELY linked with a decision on flying-boat policy is the question of size. Mr. Masefield summed it up as follows: If large aircraft (300,000 lb or more, carrying 100 passengers or more), are wanted for the longest ocean flights, there is a place for the flying-boat. He came to the conclusion that large aircraft will be an economic necessity if aviation is to perform its avowed function of transporting the masses anywhere to anywhere safely, cheaply and swiftly. "Granted large aircraft," he continued, "we come almost as certainly to the flying-boat. Having accepted the large flying-boat, we must construct the marine airports. Having constructed the marine airports, we open

the way to smaller flying-boats—initially, perhaps, the 450 m.p.h. 50-ton 80-seaters."

Those who have taken the trouble to study the problems will be aware that much of the alleged inferiority of the flying-boat has been due to the fact that it has always had to operate with very makeshift terminal arrangements. No landplane service could possibly be run with as little ground organization, and the trend is towards more and ever more ambitious terminal facilities. These are a necessity for landplanes, while the comparable marine airport should cost a great deal less. We have often stated that operators have preferred landplanes largely because the ground equipment was presented to them on a platter, as it were. Mr. Masefield used the brief but descriptive expression "hidden subsidy." And what a subsidy!

Both Mr. Knowler and Mr. Masefield, but particularly the former, brought out the interesting fact (for such it must be assumed to be), that in the very large sizes the flying-boat has a better percentage structure weight and payload than the landplane, perhaps at a very slightly lower speed. Even that small disadvantage may disappear if the Saunders-Roe scheme of drag-reduction by doing away with the step and blowing air along the hull bottom is successful in large sizes.

Three Crashes

CERTAIN facts must be borne in mind if one would obtain a balanced evaluation of the recent regrettable mishaps to airliners. That so many have involved Dakotas can, at least in part, be ascribed to the vast numbers in use. The crash on a hilltop at Stowting could have happened to any type. It was caused through the aircraft having to be diverted, and although the petrol gauges in the Dakota may have given a wrong indication, so might those of other machines.

As for the other two Dakota accidents, the circumstances *appear* similar but the causes were probably very different. There seems to be little doubt that the Spencer Airways accident at Croydon was due to an engine failing at take-off. The Kastrup crash, on the other hand, had every appearance of having been caused by elevator trouble of some sort. Geyssendorffer was one of K.L.M.'s oldest and most experienced pilots and he is not likely to have stalled the machine, unless there was something wrong with the elevator control. The finding of an elevator lock near the wreck offers a possible explanation.

Of these three accidents, therefore, only that at Croydon is likely to have any bearing on the question of whether or not the loaded weight of the Dakota should be permitted to remain at the figure at present approved by the British authorities.

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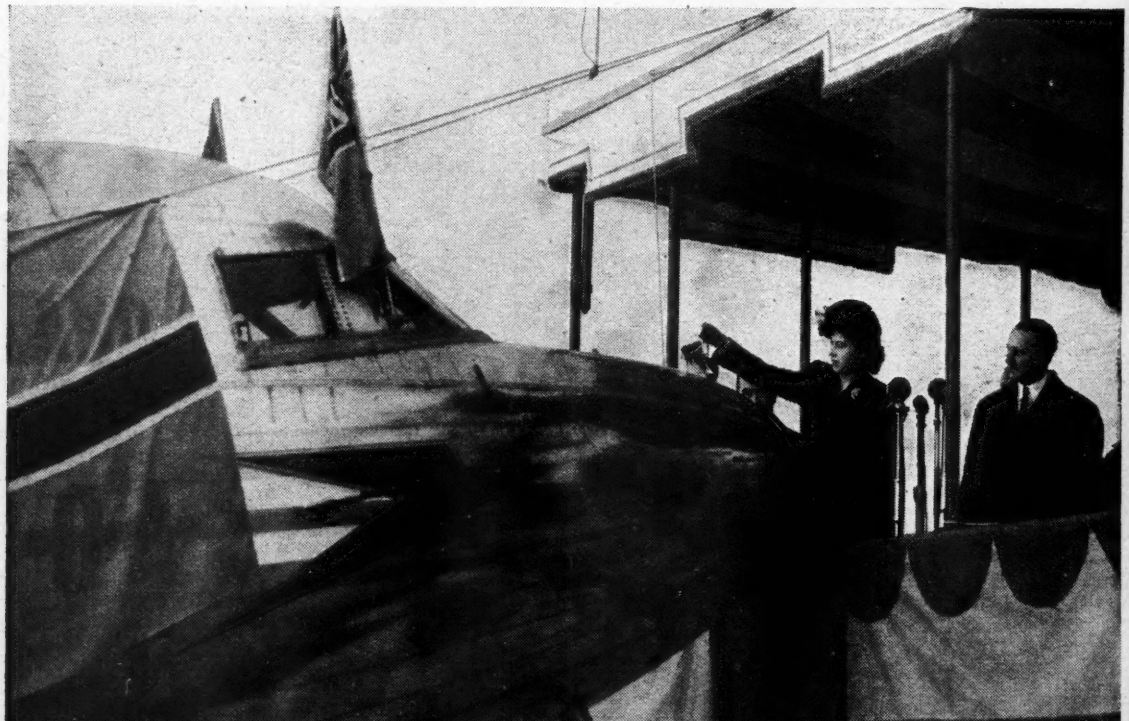
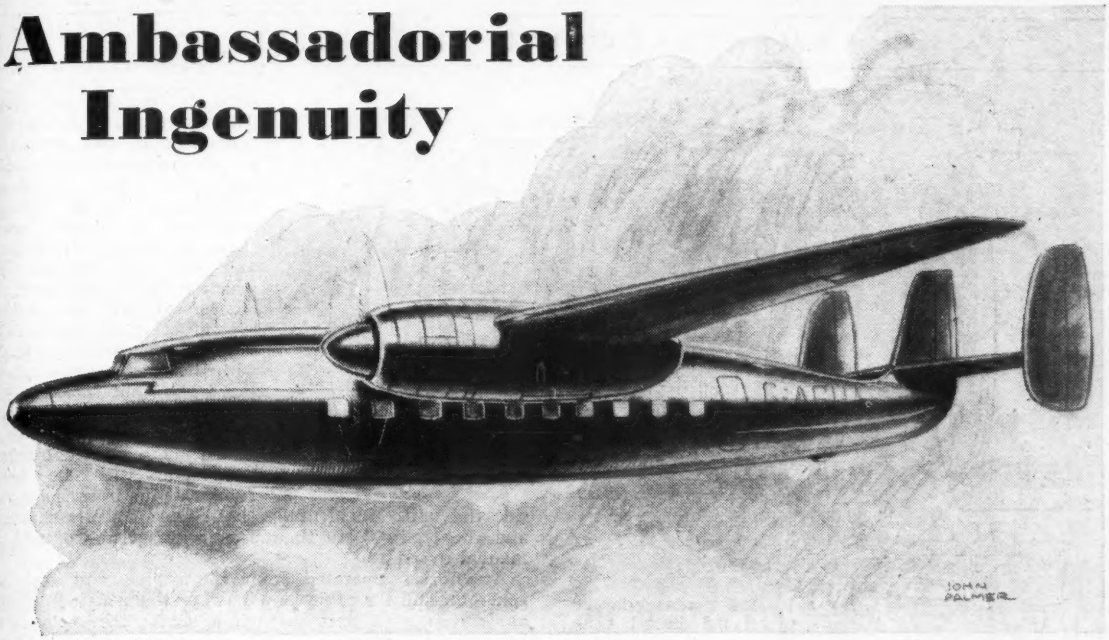


ROYAL CHRISTENING: Princess Elizabeth, Master of the Guild of Air Pilots, naming the Avro Tudor I *Elizabeth of England*. The ceremony, at London Airport, was performed by the Princess pouring Empire champagne over the nose of the aircraft.

Ambassadorial Ingenuity



Interesting Features of the Airspeed AS-57 : Aerodynamic Cleanliness Without Loss of Accessibility : Designing to an Ideal

WHEN the prototype AS-57 Ambassador has flown in the late spring it will be time enough to deal with this Brabazon 2a type in complete detail. In the meantime, however, it will be interesting to show the way in which, during the past year of development work, some of the various design and structural problems, large and small, have been successfully solved.

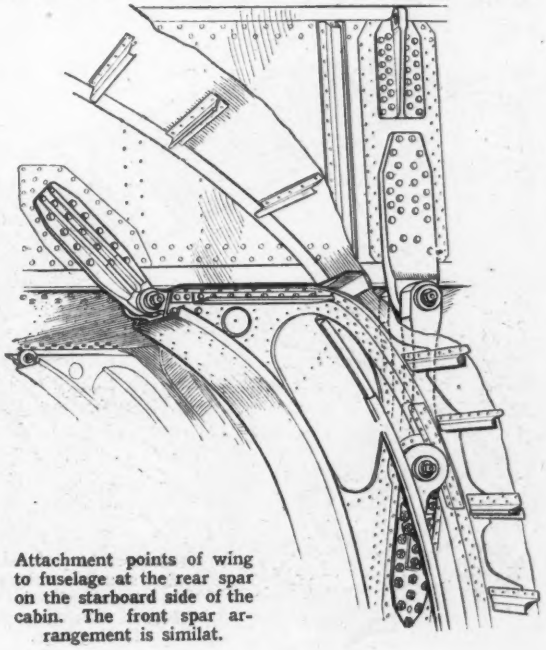
There is no doubt that, in many ways, the AS-57 is one of the most ingeniously conceived and executed projects we have yet seen. In *Flight* of October 25th, 1945, this post-interim transport was described in some detail, and the various features of the design were outlined. At that time, the aircraft itself consisted of little more than a few specially fabricated test wing sections and similar items, and, though the design had already been planned in detail by Mr. A. E. Hagg, the chief designer and technical director, and his assistants, practical experience often causes considerable modifications to initial ideas.

In fact, there have been very few divergencies from the original conception. Which says much both for the essentially practical nature of the conception—to be expected from a team led by one with such a long background of experience—and for the efforts which have been made during the past year.

The first prototype is now nearing completion, with the fuselage and centre-wing structure finished, and the laminar-flow outer wings ready for attachment. The last provide evidence of a considerable engineering achievement with such a thin-section, high span-thickness ratio design. An unusually thick skin is used, this taking care of bending and torsional loads while retaining an absolutely smooth surface.

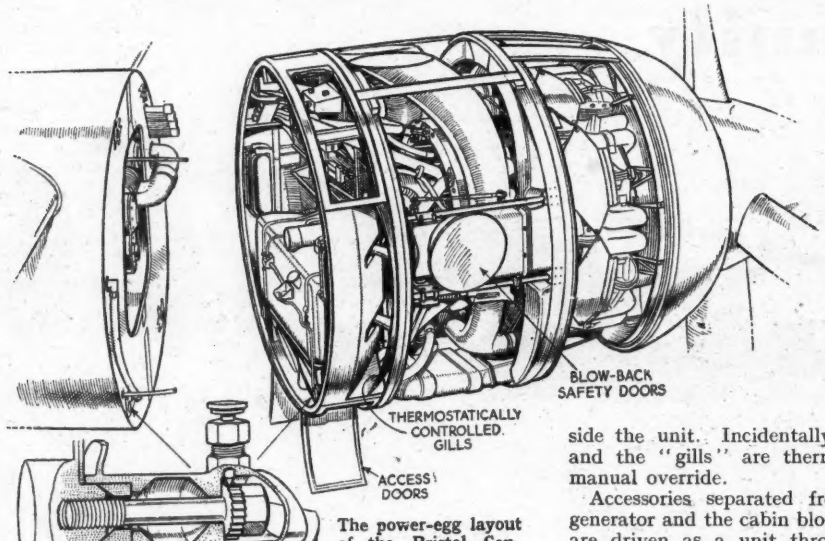
Each of the root ends of the outer wings forms 500-gallon integral tanks, while there is provision in the centre wing—which actually forms part of the fuselage—for the installation of two separate 300-gallon tanks. Incidentally, these integral tanks are not only accessible on all sides, but the immersion-pump motors are outside and may consequently be removed and replaced without draining and delving in the inspection manhole.

The fuselage, which is in three sections, is of near-perfect aerodynamic form, and it is only a pity that pressurization, in the case of the second prototype, will demand the use of mushroom-headed rivets here in place of the flush-riveting of the first aircraft. Otherwise the entire structure has an appearance of academic perfection. Some price must, of course, be paid for this in manufacturing man-hours and consequent cost, but this should be returned in operating economy both in the air and while on the ground. There are no signs that efficiency has been obtained at any cost of maintenance accessibility—in fact,



Attachment points of wing to fuselage at the rear spar on the starboard side of the cabin. The front spar arrangement is similat.

AMBASSADORIAL INGENUITY



The power-egg layout of the Bristol Centaurus showing a detail of the method of attachment by four special self-locking bolts.

the two requirements have been considered together throughout the design.

The Bristol Centaurus 630 installations are not only planned as completely and simply detachable units, but they are also unusual in that they are entirely without protuberances of any kind. Both the intake and exhaust systems are internally arranged, with the inlets and outlets flush with the cowling surface, and the two single-piece vanes, which replace the more normal gills for each unit, are pivoted so that they open inward and do not interrupt the cowling contour. The exhaust ring itself is carried aft of the cylinders, with a double discharge taking the gases over the top of the wing. The air intake is inside the cowling, ram being provided by the airscrew-speed cooling fan. There are three positions for the electrically controlled air intake (cold clean air, cold unclean air, and hot air), the air for which is taken from a muff on the exhaust, and in the system there are blow-back safety doors which are flush with the outside of the cowling. The unit is complete with its separate twenty-eight-gallon oil system, protected by a fireproof bulkhead and with its twin coolers at the base of and inside the unit. Incidentally, both the oil cooler shutters and the "gills" are thermostatically controlled with a manual override.

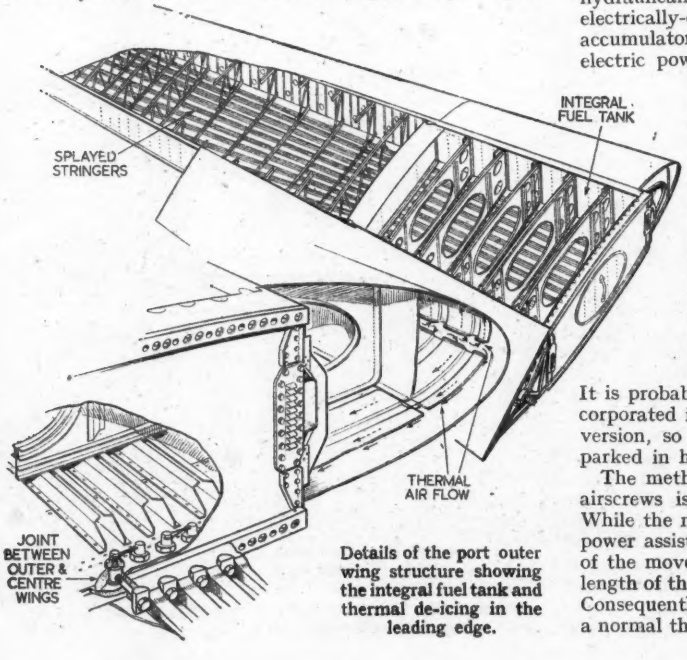
Accessories separated from the engine unit are the generator and the cabin blower (when this is fitted), which are driven as a unit through a shaft; the tachometer transmitter is mounted on this accessory gear-box. There are only four unit attachment points, with one fuel-feed connection, one glycol de-icing pipe, one pressure line to the boost gauge, and six plug and socket electrical contacts, and the necessary throttle and airscrew controls. These last consist of torque shafts with universal joints and splined couplings, and indicators permit these shafts to be connected correctly without the need of further adjustment.

Electrical Drives

It will be noticed that there is neither an hydraulic nor a pneumatic pump among the auxiliaries. In the Ambassador all the instruments, other than the manifold pressure gauges, and directly-indicating flying instruments such as A.S.I.s and altimeters, are electrically driven. While the undercarriage, flaps and brakes are all operated hydraulically, the pressure required is obtained from an electrically-driven hydraulic pump which tops up an accumulator. In this, even after complete failure of the electric power, sufficient pressure is maintained to allow one operational cycle of all the services, while still leaving sufficient pressure for brake operation.

In the case of any unlikely complete electrical failure and the loss of all the pressure, the braking airscrews will provide emergency means of stopping, and all the legs of the undercarriage, in any case, come down through the action of gravity and airflow. One advantage of an all-electric system is that the electrically-driven cabin-ventilating fan can be used while the aircraft is on the ground and when the engines are stopped—using power either from the machine's normal batteries, or from a plugged-in ground servicing battery. It is probable that this fan ventilating system will be incorporated in the pressurized as well as the unpressurized version, so that interior conditions, while the aircraft is parked in hot weather, may always be comfortable.

The method devised for the operation of the reversing airscrews is both simple in design and natural in use. While the normal throttle opening is a direct-action (with power assistance at the injector) the reverse-pitch section of the movement is geared-up both to reduce the "idle" length of the quadrant and to give rapid power application. Consequently, the forward two-thirds of the gate provides a normal throttle opening, while the rearward third is used



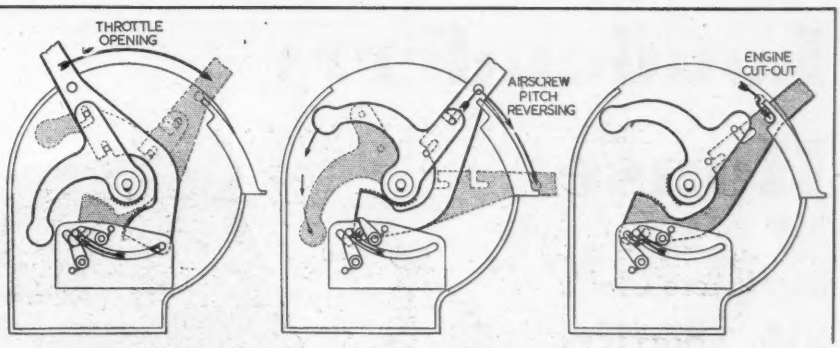
Details of the port outer wing structure showing the integral fuel tank and thermal de-icing in the leading edge.

AMBASSADORIAL INGENUITY

for reversing action. For this the throttles are lifted—this movement bringing the reversing pumps into action—before being pulled back. Since this backward movement increases reversing power, swing-correction action when in reverse pitch is quite natural to the pilot.

If the throttle are pressed down at the "stop" position and then pulled back, the engine cut-outs are brought into action. Solenoid-operated catches prevent the throttles from being opened beyond the slow-running position until the airscrews have actually gone into reverse pitch. Originally it was intended that the c.s operation should be inter-connected with the throttle movement, but this scheme has since been abandoned for various reasons, and there are now two normal c.s. controls.

The Ambassador has a steerable nosewheel, the operation of which is hydraulically controlled. This control operates through the hydraulic vane-type shimmy-damper on the nose-wheel leg, pressure being released from one side or the other by means of a short "stick" control on the left-hand side of the captain's seat. This control is out of action until its master switch is depressed. The wheel brakes are operated through rocking toe-pedals—a system which has advantages on large aircraft, since it permits taxying when the integral control lock is "in."



The simple method devised for the operation of the reversing airscrews.

Thermal de-icing follows so-far-theoretically normal practice, three petrol-fired Radiation heaters supplying hot air, at 180-200 deg C, to the wings and the tail surfaces. The necessary double skin to direct the flow of air in the leading edge extends over 18 per cent of the wing chord.

These features, which have been picked more or less at random, give some idea of the amount of design and development work which has been put into the Ambassador. When the prototype flies it will probably be the most advanced "conventional" aircraft to be seen in the air and should be a valuable British answer to the Martin 202 and Convir 240.

Aries Passes

Flying Career of Historic Lancaster is Ended

THE Avro Lancaster *Aries* of the Empire Air Navigation School, one of the most famous aircraft of the R.A.F., has been retired. Her place is being taken by a specially modified Lincoln Mk. II, named *Aries II*.

Lancaster PD 328 arrived at E.A.N.S. in 1944 to satisfy a request for an aircraft suitable for long-range navigation liaison flights. Her squadron letter was A, and as the School's practice was to name their aircraft after stars, planets and constellations, the choice was an obvious one and she was christened *Aries*. Her first job was to circumnavigate the globe.

She flew on forty days of the fifty-three-day tour, which took her through every type of climate in 202 flying hours, and she covered a distance of some 41,000 nautical miles. Perhaps the most notable aspect of the tour was not that any record was broken but that the aircraft was a normal "Lanc."

Early in 1945 *Aries* made two liaison flights, one to U.S.A. and Canada and one to South Africa, which were followed in May by some of the most spectacular flights ever made—to the North Poles (geographic and magnetic). For these polar flights special modifications were made, including the removal of the gun turrets and camouflage. Additional fuel tanks were installed in the bomb bays and a Lincoln-type undercarriage was fitted. To replace the nose and tail turrets fairings were built on and from now onwards *Aries* could be considered as a Lancastrian rather than a Lancaster. After considerable preparation, *Aries*, in her peacetime guise, took off from Shawbury two days after VE Day and when she returned sixteen days later, after flying a total of 25,000 nautical miles (17,000 of these in the Arctic Circle) she arrived back at her base three minutes ahead of schedule.

In the following July a trip to Canada was made and then in September a tour of the Mediterranean, all of which put another 17,300-odd miles in the log book. The next "big" flight was to South Africa in January, 1946, when during a normal liaison flight *Aries* made a non-stop flight from Cairo to Cape Town and broke all England-Cape records.

The last really long flight was in August last year. True, in May *Aries* made a trip to Newfoundland, but this was considered a "local" flight by the E.A.N.S. On the last long flight to Australasia three F.A.I. records were established—London to Karachi (19 hours 21 minutes), London to Darwin (45 hours 35 minutes) and London to Wellington (59 hr 51 min).

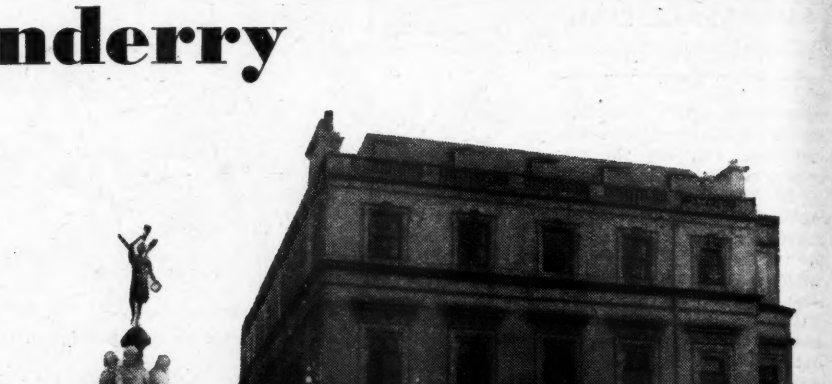
Finally, in October, 1946, this historic Lancaster made her last liaison tour through Canada and the United States.

MAJOR FLIGHTS OF "ARIES"

Date	Captain	Mission	Route	Distance (miles)
October 1944	W/C. McKinley	World Flight	Iceland — Labrador — Canada—Hawaii—Samoa — New Zealand — Fiji—Australia — New Guinea	41,500
Fastest time—England to New Zealand Fastest time—Australia to England				
February 1945	W/C McKinley	Canada — U.S.A.	Azores — Newfoundland — Canada — U.S.A. — Bahamas	14,595
March 1945	S/L. Imrie	South Africa, Palestine	Egypt — Sudan — Kenya — Southern Rhodesia — Transvaal — Cape Province — Palestine.	13,977
May 1945	W/C. McKinley	North Polar Regions	Iceland — North Geographic Pole — Labrador — North Magnetic Pole — Canada — Yukon.	25,000
Longest West-East Atlantic crossing				
June 1945	S/L. Imrie	Canada	Canada.	12,000
Longest East-West Atlantic crossing				
Sept. 1945	W/C. Clift	Palestine	Gibraltar — Egypt — Palestine — Malta — France.	5,300
January 1946	W/C. Dunnicliffe	South Africa	Egypt — Cape Province — Transvaal — Southern Rhodesia — Kenya — Sudan — Malta.	12,402
First non-stop flight Cairo to Cape Town Fastest time England to Cape Town				
May 1946	S/L. Aldridge	Newfoundland	Newfoundland.	3,950
August 1946	S/L. Aldridge	Australasia	India — Ceylon — Australia — New Zealand — Fiji — Singapore — Aden — Malta.	32,094
F.A.I. Record—London to Karachi F.A.I. Record—London to Darwin F.A.I. Record—London to Wellington				
October 1946	W/C. Dunnicliffe	Canada, U.S.A.	Labrador — Ottawa — New York — Ohio — California — Alabama — Florida — Maryland — Washington.	12,309

Londonderry House

Royal Aero Club's New Quarters in Park Lane : Luxurious Annexe for Associate Members



"Flight" photograph.

IT seems highly probable that many readers of *Flight* may have gained the impression, from some of the letters which have appeared in the correspondence columns of late, that apart from the State-owned air services, a few charter concerns, and those clubs which have been lucky enough to lay their hands on an aircraft or two, flying in this country is almost non-existent. The Government, it has been said, is putting every obstacle in the way of private flying; it is trying to discourage it—even to kill it! Why can't we have the Civil Air Guard again? Why can't we have Permits to Fly for "ultra-lights" again? Why all these restrictions, etc., etc.?

Brooding over these things, *Flight's* representative paid a visit to the Royal Aero Club's new premises at Londonderry House, Park Lane, a few days before last Monday's official Press reception, to see how things were shaping, and the thought crossed his mind that if the R.Ae.C. found it necessary to overflow from 119 Piccadilly into this spacious "desirable residence" then surely there must be a fair amount of activity among those who fly privately because they like it?

There is!

Londonderry House, 19, Park Lane, is conveniently just round the corner from the Piccadilly headquarters of the Club and is situated opposite the junction of Park Lane and Hamilton Place. It is a rather plain, straight-up-and-down building, its Georgian severity relieved only by a first-floor balcony. Its façade was badly chipped during the blitz, and it cannot be said that these scars, honourable though they be, improve its external appeal. But once through the front door, situated at the southern extremity of the house, one's impressions instantly change. Passing through the outer vestibule, one enters the main hall (in which a pre-fab could easily be erected) from which a broad staircase rises in two stages to an intermediate landing and then branches left and right to the first floor. This indeed gives the real "Londonderry air" of the halcyon days of spacious luxury when famous feet mounted the massive stairway to the state functions in the drawing-rooms above. Which reminds us that Lord Balfour is reported to have observed that on such occasions he never knew whether to ascend by the right or left-hand staircase.

But to return to the democratic present, the main drawing-room of Londonderry House is now the touring department of the R.Ae.C., and it was here that *Flight's* representative learnt, from Mr. Geoffrey Dorman who is in charge of the

"Flight" photograph.

SPACIOUS LUXURY: The grand staircase leading from the main hall to the reception rooms on the first floor. Many of Britain's most famous leaders mounted these stairs in the "good old days" when Londonderry House was the scene of State occasions.

information bureau, that in spite of all the "beefing" about restrictions on amateur aviators, this department deals with an average of about 20 enquiries a day for routes and ancilliary "gen," and peaks up to some 50 such applications a day during the summer months.

The touring department accommodates, beneath a lofty ornate ceiling, F/L Duncan de la Hoyde, its manager; Mr. A. McDonald, who handles passports and visas; and Mrs. Anne Blackwell, late of the A.T.A., whose duty it is to cope with carnets. Flying maps adorn the walls here and there, and there is a large polished table in the centre of the room on which amateur pathfinders can study their proposed routes in comfort. The room has, in fact, the quiet restful atmosphere of a well-ordered library in an exclusive club. There is, however, another room set aside as a library, reading and writing room, for the general use of the Club's associate members in whose interests Londonderry House has primarily been taken.

Two other apartments in this dignified building are worthy of special mention, namely the ballroom on the first floor and the banqueting hall on the ground floor adjacent to the main hall. The former was, at the time of *Flight's* visit, in process of being spring-cleaned, but the latter was already restored to its pristine beauty. To enter that hall is to step back into English history. It is a long, narrow room (like the ballroom, which measures 100ft by 25ft) and its tall, dark walls with their clusters of orange wall-lights that glisten on the long, highly polished table, suggest secret panels and family ghosts. Its precise use had not, at the time, been definitely settled, but it will probably be a conference room.

"Flight" photograph.

DINNER WAS SERVED: The banqueting hall, with its panelled walls and double doors, the long polished table and the ornate chairs, is a chamber of impressive dignity which may become a conference room or a restaurant.

Rapid Restoration

The ballroom, as we saw it that day, was emerging from the grime left behind by an efficient and unsentimental Army whose grim boots had coated the parquet floor with so much dirt that it might have been the deal planking of a local drill hall. But a mechanical sanding machine had removed about half of it (and was noisily busy, just then, unearthing the pattern on the parquet floor of what will be Col. R. L. Preston's office) while polishers had also been at work to good effect. Pictures, removed for safety during the war (to judge by the parquet, the Army would have been almost as great a menace to them as the *Luftwaffe!*) are to be replaced, when it will make a magnificent setting for conferences and receptions.

Not all of Londonderry House has been taken over by the R.Ae.C., for its generous owner, Lord Londonderry, still retains the top floor as his Town flat, while the Club has itself extended hospitality to The British Gliding Association, the British Charter Association, The Association of British Aero Clubs, and G.A.P.A.N.

"Flight" photograph.

QUO VADIS? A corner of the touring department, once the large drawing-room, where flying members of the R.Ae.C. will be able to plan their intended cross-country and cross-channel flights, and have passport, visa, and carnet formalities settled for them by officers of the club.

Below stairs, extensions are being carried out in the kitchens to cope with the feeding of associate members in a restaurant or snack bar, and it is even hoped to persuade the G.P.O. to provide the amenities of a telephone service, at present lacking.

Lord Londonderry, incidentally, has placed all this luxurious accommodation at the disposal of the R.Ae.C. rent free. Their only commitment under this heading are the rates, which, we understand, will cost the club about £1,500 a year. When the Army withdrew, it had been hoped to have the house ready for the club's use much sooner but it seems that it took the authorities a considerable time to make up their minds if it could be used for such a purpose, or if it should be used to alleviate the housing shortage.

Even so it has not been possible to complete certain essential repairs because the Ministry of Works has not yet granted the necessary licence. It has been approved in principle but deferred. As a result three of the rooms cannot be used.

Lord Londonderry received the Press in the banqueting hall on Monday afternoon and said he hoped the house would become, through the Royal Aero Club, the aviation centre for the whole of the British Empire.

HERE AND THERE

FRONTIER EXERCISE: Tempest IIs of No. 152 Squadron, India Command, simulate an attack on a convoy. Details on p. 126.

A Braw Laddie

WHATEVER may be the outcome of the enquiry into the Dakota accident in Kent (it is still in progress at the time of writing) one person at any rate is clearly worthy of commendation, namely the 17-year-old apprentice steward, Arthur J. Hagan.

Arthur Hagan's calm courage has already been commented upon during the hearing, and his former comrades in the A.T.C. squadron in bonny Dundee have every reason to feel proud of him.

At present Hagan is in Ashford Hospital with a badly broken arm, and we wish him a speedy recovery.

Rainmakers?

ATTEMPTS to produce rain by sprinkling clouds with dry ice from aircraft are reported by the *Sydney Sun*, which added that some officials of the Council of Scientific and Industrial Research, said to be responsible for the experiments in co-operation with the R.A.A.F., had refused to confirm the story, although others had acknowledged the truth of it.

Dr. E. B. Kraus, Austrian-born senior officer of the Council's physics section, who was named as in charge of the experiments, went further than refusing to confirm, he flatly denied that any such flights had been made, though the idea was "in the stage of discussion."

But the Australian newspaper, one of the highest repute, sticks to its story (while duly recording the denials) and even adds the details that a Beaufighter was used for the job, and flew from Mascot airfield.

Tweed and Tagus

OUR enterprising friends North of the Tweed have now started a series of holiday cruises by air from Prestwick to Portugal, allowing the tourists a 14-day sojourn at Estoril, a pleasant little holiday resort near Lisbon.

The inaugural flight, enjoyed by Mr. Tom Johnston, chairman of the Scottish Tourist Board; Mr. E. R. Boyd, chairman of the Glasgow Chamber of Commerce; and five Scottish newspaper editors and their wives was made recently.

College of Aeronautics

G/C. R. C. HOCKEY, D.S.O., D.F.C., and Mr. N. S. Muir, B.Sc., A.F.R.Ae.S., who have been appointed heads of the Department of Flight and the Department of Propulsion respectively at the College of Aeronautics. Both have distinguished careers.

The former officer, who was Inspector of Air Accidents before the recent war, has piled up some 4,000 hrs flying in 75 different types, while Mr. Muir went to America with Sir Roy Fedden's technical mission, later joining the Directorate of Special Projects under Dr. Roxbee Cox. He returned to the U.S. in May, 1944, with the Gas Turbine Mission, and remained in Washington as chief of the Engine Development Branch of the British Air Commission until his release by the M. of S. last September.

Flying Doctor Services

ABOUT half the Commonwealth of Australia is covered by flying doctor services. At the present time more than 130,000 miles are flown annually, and many thousands of medical consultations are given by wireless.

Over 250 wireless outposts, most of them with landing grounds, have been established throughout the continent, so that advice may be given, special visits flown, or arrangements made to bring patients to hospitals.

Typical Example

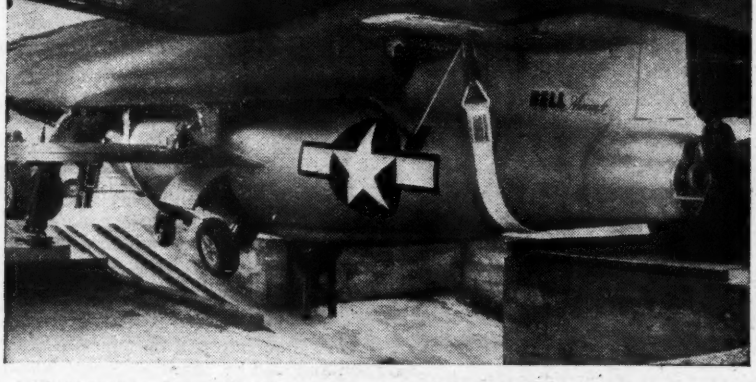
A CORRESPONDENT to *Flight* recently referred to the way in which the daily Press invariably makes the most of every air accident in order to cash in on the public's love of being horrified, but shows little interest in outstanding examples of safe operation, the result being to create an exaggerated impression in the public's mind of the actual degree of risk in air travel as compared with surface transport, and thus to hamper civil aviation.

Reports in the "dailies" of how a B.O.A.C. Constellation recently completed an Atlantic crossing on three engines were a brilliant example of this unfortunate attitude, in that they went out of their way to present the incident as a narrow escape from disaster when it was nothing of the kind.

Comments subsequently overheard in a London tube by a member of *Flight's* staff clearly showed how this false impression had been soaked up by the public.

A "Story" at Any Price?

THERE is, of course, nothing remarkable in a modern four-engined aircraft completing a lengthy flight on three engines, and the fact that this Constellation was at 17,000ft when one engine packed up indicates that it was a fair distance out from Gander at the time. Moreover, it was the easy direction as



MARSUPIAL: The Bell XS-1 supersonic research aircraft being secured semi-internally on a B-29 Superfortress. The pilot enters the cockpit from the interior of the bomber which, for the Bell's first flight under power, released it at 27,000 ft. This new view shows undercarriage and rocket venturi details.

HERE AND THERE

regards prevailing winds and, as Capt. R. Allen himself said, they could have managed quite well on only two engines had it been necessary.

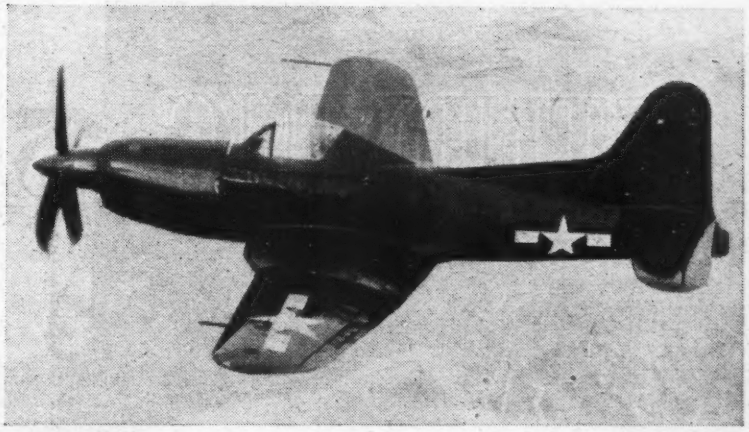
So if the lay Press wanted to stress anything, they could very well have "splashed" the story as an example of the big safety factor in transatlantic airliners. But no!—they preferred the lives-in-jeopardy angle, and talked of an ambulance and fire-tender "standing by" at Prestwick, in order to heighten the suggestion of peril, when they must have known—or *ought* to have known—that ambulances and fire-tenders are *always* "standing by" at every airport as part of the normal emergency equipment.

Fed on this sort of poppycock, no wonder the citizens in the tube train had a completely wrong idea about the whole thing and were even heard to refer to it as "a scandal!"

East Indies Project

A NETHERLANDS Government air mission recently went to India with the ultimate aim of running a daily service to the Netherlands East Indies with stops at Karachi and Calcutta.

The mission, headed by M. Ede Van Der Pals, seeks agreement with the Government of India for the operation of K.L.M. aircraft. Dutch planes are already flying to India as a governmental air service for military repatriation. They now want to switch over to the civil K.L.M. service, and the mission travelled to New Delhi for talks with Sir Frederick Tymms, Director-General of Civil Aviation.



TWIN-TURBINE: In the nose of the Ryan XF2R-1, potential successor to the FR-2 Fireball fighter of the U.S. Navy, is a turbine-airscrew unit; the rear fuselage section houses a turbine-jet, the intakes for which are probably in the centre section leading-edges, as on the Fireball; "in the 500 m.p.h. class" is so far the only indication of performance.

News in Brief

POSTAL rates for air mail letters and post-cards for countries outside Europe have been reduced in all cases except Australia, New Zealand, and the West Pacific islands.

* * *

Rates of wages in the rubber manufacturing industry are set out in Statutory Order, 1947, No. 3, obtainable from the Stationery Office, York House, Kingsway, London, W.C.2, at 2d. per copy.

* * *

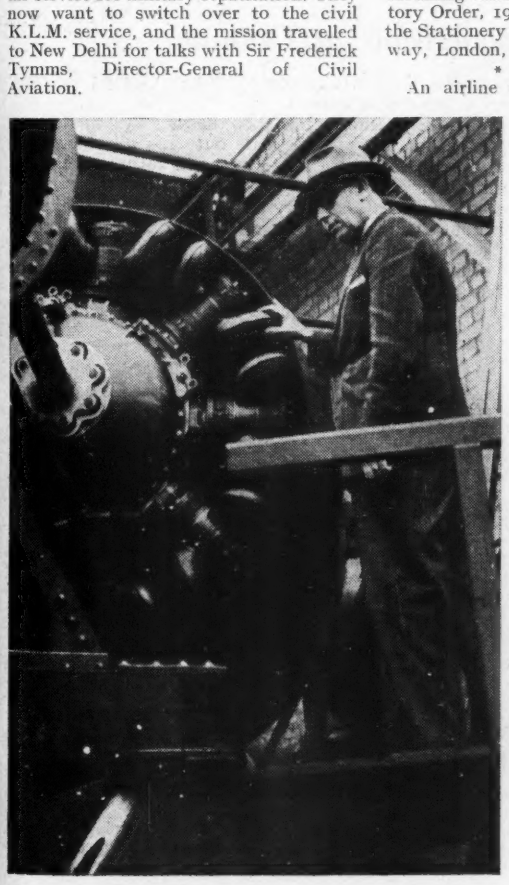
An airline is to be opened between Ankara, Istanbul, and Athens by a Turkish concern, and test flights are to be carried out. A line to Baghdad is also under consideration.

* * *

Air Vice-Marshals Sir John D'Albiac and S. P. Simpson, appointed commandants of London (Heathrow) and Northolt airports respectively, went to Prestwick last week on a ten-day inspection of the airport and its facilities before taking up their duties.

* * *

About 200 to 250 employees will be absorbed in a new factory near Airdrie, which is now being built by the Valor Co., Ltd., Birmingham.



POWER FOR BRABAZON I: R. N. Aveline, assistant to the Chief Engineer of the Engine Division of Bristols, inspects the coupled Centaurus engines after a run on the test bed.

"Flight" photograph.

Substantial increases in pay have been awarded by an arbitration panel to the American T.W.A. pilots who went on a 15-day strike some months ago. First pilots on overseas routes will in future get up to £275 a month and co-pilots up to £130 a month.

* * *

The light aircraft acquired by the Goodyear Tyre & Rubber Co., of Wolverhampton—a Percival Proctor—is not only used for speedy travel by the firm's representatives, but also as a "flying test bed" for experimental work with their single-disc aircraft brake.

* * *

By the use of a new electrofilter plant, installed at the Rugby works of Lodge Plugs, Ltd., the raw ceramic material recovered in a year in the form of powder which would otherwise be lost into the atmosphere will be sufficient to make more than four million sparking plug insulators.

* * *

In his book "Dunlop in War and Peace," Sir Ronald Storrs discloses that the airman who dropped the first bomb on the Dunlop works at Montluçon (Vichy) was himself a Dunlop man who had joined the R.A.F.

* * *

Mr. H. D. Demoulins has been appointed to the board of the Anglo-American Oil Co., Ltd., and will be responsible for the refinery operations of the Anglo group of companies. His experience in this field dates back to 1912, and during the war he served on the London section of the Caribbean Area Petroleum Committee.

* * *

A paper on the gas turbine in British industry, by Sir Claude Gibb, chairman and managing director, and Mr. A. T. Bowden, chief research engineer of C. A. Parsons & Co., Ltd., was read before the Royal Society of Arts in London last week. The opinion was expressed that the gas turbine's future in this field lay largely on its ability to burn coal fuel rather than imported oil—a development which would be completed in due course.

"Flight" photograph.

Capt. W. R. Saunders taxying out for his first flight in a Vampire, of No. 130 Squadron. He found it a thoroughly pleasant aircraft. The machine is of the latest type, with "bubble" canopy and Goblin II turbine jet.

U.S. Officers Visit Vampire Squadrons at Odiham

OFTEN *Flight* has recorded visits to R.A.F. Stations by observers and missions from abroad, but these have usually had as their object the study of organization or operational technique and have been in the nature of demonstrations rather than discussions. Our relations with the U.S.A. are now such that formal military reviews can give way to a neighbourly exchange of information and opinion, and the recently announced Anglo-American Officer Exchange plan (see *Flight* of January 9th) should prove of very real benefit to both parties.

Certainly this seems to have been borne out at Odiham last Monday week, when Col. John W. Persons, chief of the Headquarters Flying Safety Service of the U.S.A.A.F., and his aide, Captain W. R. Saunders, were acquainted with features of the D.H. Vampire FI and exchanged views with R.A.F. personnel on accident prevention.

The American visitors were welcomed by G/C. A. F. Anderson, D.S.O., D.F.C., Deputy Director of Accident Prevention at the Air Ministry, W/C. C. D. North-Lewis, D.S.O., D.F.C., Officer Commanding R.A.F. Station, Odiham, and W/C. T. Balmforth, D.S.O., D.F.C., Wing Commander Flying. They were introduced to officers of Nos. 54, 130 and 247 Squadrons, all equipped with Vampires and commanded respectively by S/L. Lyne, A.F.C., S/L. Courtney, D.F.C., and S/L. Taylor, D.F.C.

Ailerons and Seats

A full report of their chats in the mess and on the tarmac may not be given, but the following dialogue was typical:

"Do you have any trouble with aileron boosters, Wing Commander?"

"We don't use them, Colonel."

"That's very interesting. We have them on the P-80, you know . . .," and the Colonel went on to explain briefly the hydraulic power-assisted controls of the Shooting Star.

The Wing Commander was not slow to extol the Vampire's unboosted ailerons, and Mr. Burrell of de Havillands contributed a few ideas on control systems for jet fighters. A helpful discussion ensued.

It seems that, should the P.80 booster system fail, it is necessary for the pilot to bale out, and an emergency control system may be a requirement in future on British and American jet fighters.

One gathered that, contrary to what is generally believed in this country, the mortality rate is lower on the American "jets" than on airscrew-driven machines, like the P.51. Colonel Persons could offer no ready explanation of this, but suggested that a factor was the sturdy seat which is stressed for 14 g. Though an aircraft may be virtually

"Flight" photograph.

Col. J. W. Persons (left) and Captain W. R. Saunders (right) with W/C. C. D. North-Lewis, D.S.O., D.F.C., Officer commanding R.A.F. Station, Odiham.

disintegrated, this may save the pilot. Yet stronger seats are on the way.

On the subject of "g," it seems that the Odiham pilots can stand their full share. This was suggested by a flying demonstration by F/O. "Nick" Carter of No. 247 Squadron and by the story of a "g" recorder which, removed from beneath a Vampire's seat after a number of flights, showed 10½. The identity of the stalwart who unknowingly attained this acceleration has not yet been established.

The Captain and the Vampire

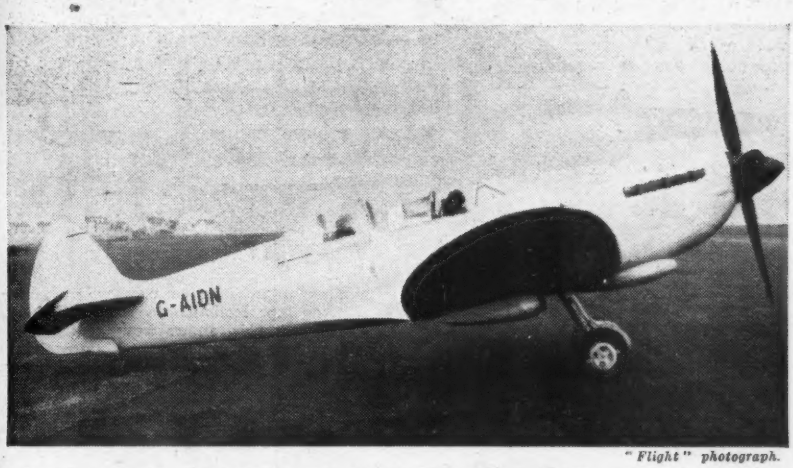
Colonel Persons, though he has flown more than his share of aircraft types since he served in the R.F.C. during the 1914 war, has so far had no experience on jet-propelled machines, and he thought it prudent not to be initiated while at Odiham. Captain Saunders, however, is familiar with both the Shooting Star and Thunderjet, and after he had been briefed by S/L. Courtney and by Mr. R. Norman, de Havilland's resident representative at Odiham, the last we saw of him he was raising the wheels of a Vampire after an exemplary take-off. One heard later that after about half an hour in the air he made a perfect landing and pronounced enthusiastically on the Vampire's flying qualities. The aircraft he flew was of the newest Mk FI series with bubble canopy, provision for pressurization, a Goblin II turbine jet, a Machmeter and other refinements.

The Colonel contented himself with a flight in the elegant yellow Spitfire Trainer which Lt. Cdr. Lithgow brought over. Another Vickers-Armstrong's contribution—presumably unofficial—was a Viking which flew across on one engine.

On the left is G/C. A. F. Anderson, D.S.O., D.F.C., Deputy Director of Accident Prevention. (Right) Lt. Cdr. Lithgow and Col. Persons before flying in the Spitfire Trainer.

After a cold, windy afternoon on the airfield our American visitors were duly warmed in the evening at a "dining-in"—cum-guestnight, attended by Air Vice-Marshal S. D. Macdonald, C.B.E., D.F.C., A.O.C. No. 11 Fighter Group, and his S.A.S.O., G/C. V. S. Bowling.

The itinerary planned for Col. Persons and Capt. Saunders includes the R.A.F. stations at Bassingbourne, Upwood, Marham, West Raynham and Hullavington, so they will see—and in some cases fly—representative aircraft of all classes, including the Meteor. This, it is to be hoped, will be a short-span Mark IV, from which they may judge the performance and manoeuvrability combined to such an exceptional degree in this standard fighter. They will also be interested in the Avro Lincoln and in various Service trainers, particularly the 3-seater Percival Prentice which introduces a new instructional technique.



"Flight" photograph.

The Supermarine Spitfire Trainer, now bearing civil registration markings. (The diminutive fuselage markings are presumably for the benefit of those indulging in unofficial low-flying practice.)

A HAWKER-SIDDELEY APPOINTMENT

MR. MICHAEL GOLOVINE, M.B.E., A.C.G.I., A.F.R.Ae.S., has been appointed sales co-ordination manager to Hawker-Siddeley Aircraft, Ltd.

During the war Mr. Golovine was a Squadron Leader in the Technical Intelligence Section at the Air Ministry, and was latterly Technical Representative, Armstrong Siddeley Motors, Ltd.

DEATH OF MR. A. W. MARTYN

POSSIBLY few of the younger generation are aware of the fact that the Gloster Aircraft Company was founded by Mr. A. W. Martyn, whose death in a London nursing home occurred on January 18th, at the age of 76. During the first world war his firm, H. H. Martyn and Co., of Sunningend Works, Cheltenham, built de Havilland machines for the Aircraft Manufacturing Company. In 1916 the new firm was founded under the title Gloucestershire Aircraft Co., Ltd., later changed to Gloster Aircraft Company. It was under the control of the Aircraft Manufacturing Company, with Mr. Holt Thomas as chairman and Mr. A. W. Martyn as managing director. Among the other directors on the board were Mr. David Longden and Mr. Hugh Burroughes, the latter of whom is still a director.

In 1921 Mr. H. P. Folland was engaged as chief designer, and there followed a line of successful aircraft, such as the racing "Bamel," the Grebes, Gamecocks and Gauntlets, and some Schneider seaplanes. Two years later Mr. Martyn bought the Steel Wing Company and also took over the development of the Hele Shaw variable pitch airscrew, which has since become the Rotol.

Mr. Martyn retired from the Gloster company in 1927 and gave much of his time to local activities in Cheltenham. In 1935 he became a director of Dowty Equipment, Ltd., and when this business became a public company in 1936 Mr. Martyn became chairman, a position which he held until his death. His business associates have lost a great friend and a kindly adviser.

FORTHCOMING EVENTS

Jan. 30th.—"Aerotech" Flying Club No. 1: "Gliding and the A.T.C." S/L. E. J. Furlong, D.F.C.
Jan. 30th.—R.Ae.S. London; "Wartime Developments in Air Transport," Air Marshal Sir Ralph Cochrane.
Jan. 31st.—Inst. of Welding, East Scotland; "Recent Processes in Plastic Welding," J. H. Paterson.
Feb. 1st.—British Interplanetary Society; "Interplanetary Flight—Is the Rocket the Only Answer?" L. R. Shepherd.
Feb. 5th.—R.Ae.S. Glasgow; "General Aspects of Aircraft Design," R. W. McIntyre; Royal Tech. Col. 7.30 p.m.
Feb. 11th.—R.Ae.S. Belfast; "Electrics in Aircraft," Mr. Woodford.
Feb. 15th.—Pathfinder Association; Grand Ball, Dorchester Hotel.

Symbol of Power

The New Rolls-Royce Eagle: Highest Powered British Piston Engine

AFTER more than a quarter of a century the name and nature of the original 350 h.p. Rolls-Royce Eagle engine, two of which brought Alcock and Brown across the Atlantic in their Vickers Vimy, in 1919, is still familiar; and in fact this early V-12 water-cooled piston engine layout is still maintained for Merlin and Griffon, the new Eagle being the company's first important departure from it.

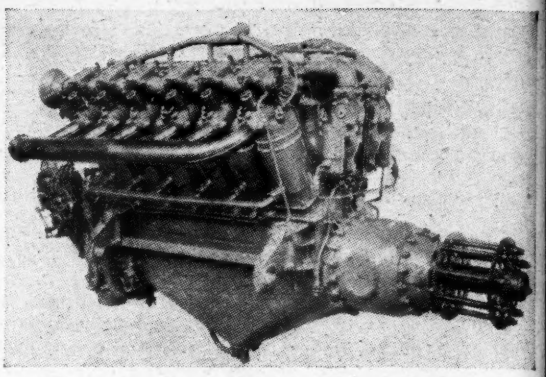
The new Eagle is a 24-cylinder, liquid-cooled, flat H design nominally rated at 3,500 h.p. The majority of the well-tried features of the Merlin and Griffon Series have been incorporated in it but one important difference is the use of sleeve valves.

Although it has been in existence for many months, and has already undergone its preliminary trials in a secret new high-performance Westland aircraft, little detailed information has as yet been released.

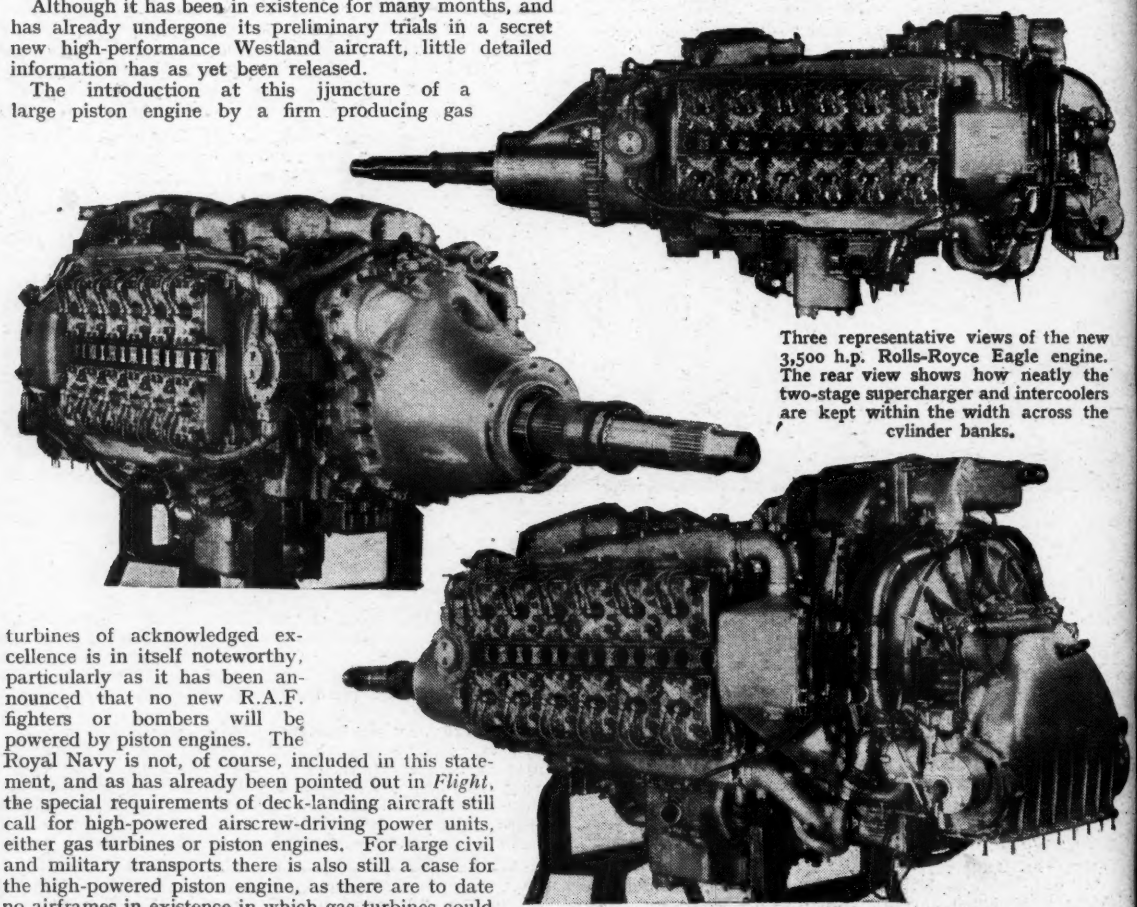
The introduction at this jjuncture of a large piston engine by a firm producing gas turbines of acknowledged excellence is in itself noteworthy, particularly as it has been announced that no new R.A.F. fighters or bombers will be powered by piston engines. The Royal Navy is not, of course, included in this statement, and as has already been pointed out in *Flight*, the special requirements of deck-landing aircraft still call for high-powered airscrew-driving power units, either gas turbines or piston engines. For large civil and military transports there is also still a case for the high-powered piston engine, as there are to date no airframes in existence in which gas turbines could be employed economically. If the power output development of the Merlin series can be taken as an indication, it would seem that the maximum output of the Eagle may in time approach 5,000 h.p.

In keeping with large piston-engine designs, the Eagle starts life with a two-speed, two-stage supercharger and a reduction gear for an eight-blade Rotol contra-rotating airscrew. A fuel injection system is employed which is similar to that on Griffon and Merlin engines. The Rolls-Royce fuel pump, located on the crankcase lower half, delivers petrol to the airstream at the impeller eye.

An interesting and ingenious new feature is the integral coolant header tank incorporated in the crankcase top casting. Two waterproof B.T.H. magnetos are fitted.

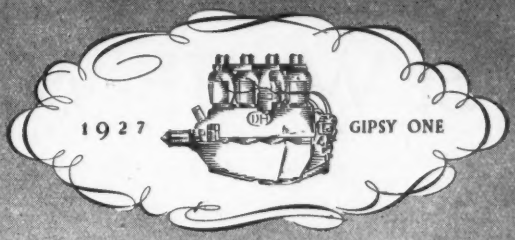


The Eagle VII of 1914-18 war vintage.



Three representative views of the new 3,500 h.p. Rolls-Royce Eagle engine. The rear view shows how neatly the two-stage supercharger and intercoolers are kept within the width across the cylinder banks.

The Rolls-Royce Company have confidence in the demand for high-powered piston engines for particular installations for several years to come. It is noteworthy that, in spite of the need in wartime to concentrate on the successful Vee-twelve designs, the possibilities surrounding such things as air-cooling, sleeve valves, and C.I. and two-stroke engines in their various forms, have all been examined and in some cases tested at Derby.



1927

1947

The reliability and long life of Gipsy engines, and the very considerable economy that results from their long periods of service between overhauls are simply explained by the fact that twenty years of steady development have been applied to one basic design of engine which has been used in thousands all over the world. There is no short cut to piston-engine perfection.

DE HAVILLAND ENGINES

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ENGINES

WHAT IS *Originality?*

The ability to tackle an old subject from a new angle is a useful recipe for getting to the top in any walk of life. Before the aeroplane came along, people had solved most of the problems of being comfortable on the ground, but the job of making them comfortable in the air demanded an original approach. Being able to see the subject from a fresh viewpoint has had much to do with the successful development of the Rumbold standard of comfort in the air.

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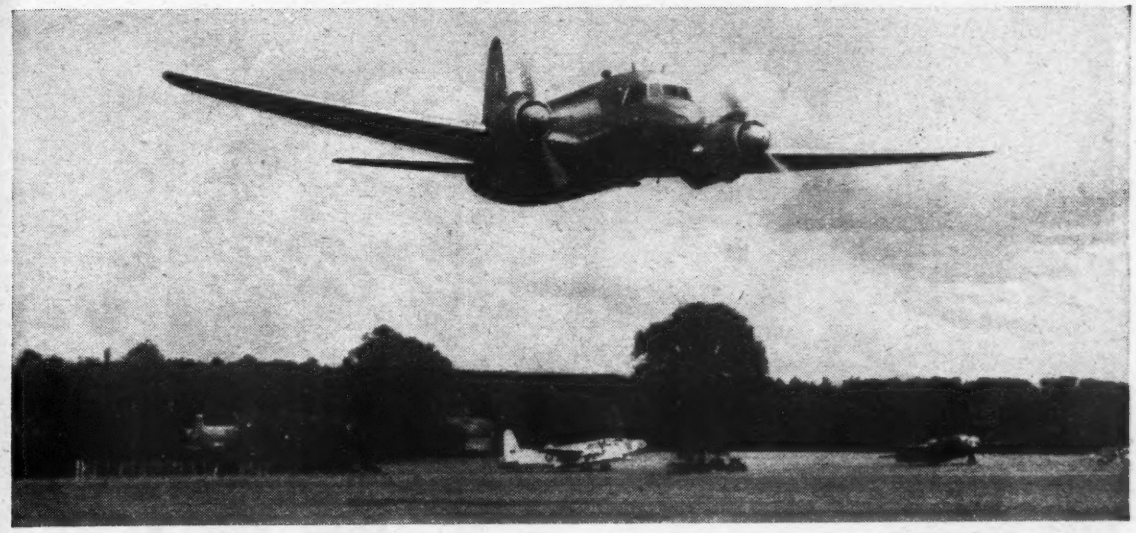


His Majesty's Vikings

King's Flight Aircraft to be Used by Royal Family in South Africa

WHEN Their Majesties, accompanied by the two Princesses, arrive in South Africa about the middle of next month, four Vickers Vikings of the King's Flight under the command of A. Cdre. E. H. Fielden, C.V.O., D.F.C., A.F.C., will await them.

This assuredly can be taken as marking a very real step forward in aviation. The lives of our Royal Family are precious and the fact that aircraft are to be used in conjunction with the Royal train and Royal cars must be taken as indicative of the standard of safety which air transport has reached to-day. By the same token it is also a tribute to Vickers-Armstrongs, Ltd., that Vikings have been selected to perform this most important duty.

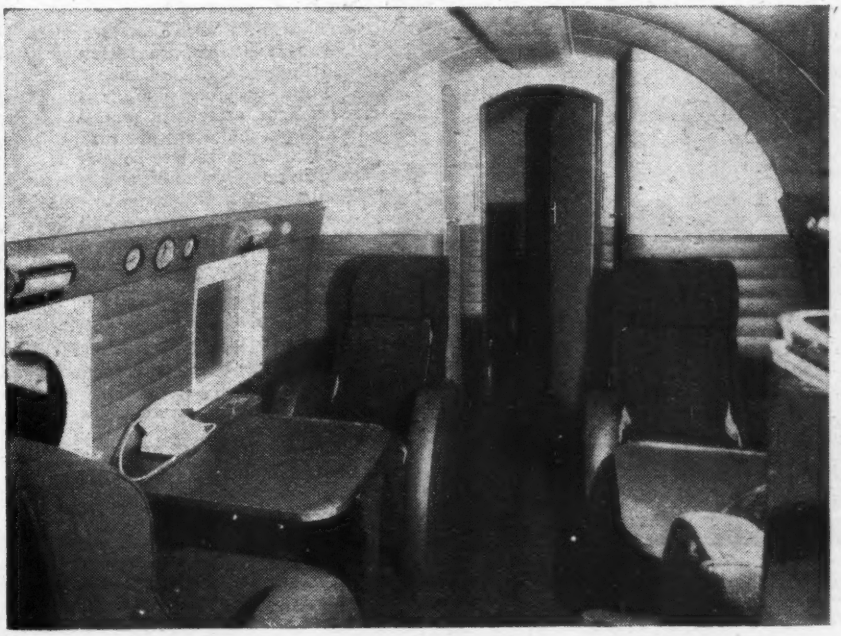
The four King's Flight aircraft to be employed are Viking C Mk IIs, and they respectively carry the official designations V.L. 246 and V.L. 247—the Royal aircraft; V.L. 245, the staff machine; and V.L. 248, the maintenance aircraft.

Modifications Entailed

Since we intend to devote special attention to the Royal aircraft in a later issue, we feel that the best interest is served by giving in this article a picture of some other, perhaps less colourful but none the less important, aspects of the machines.

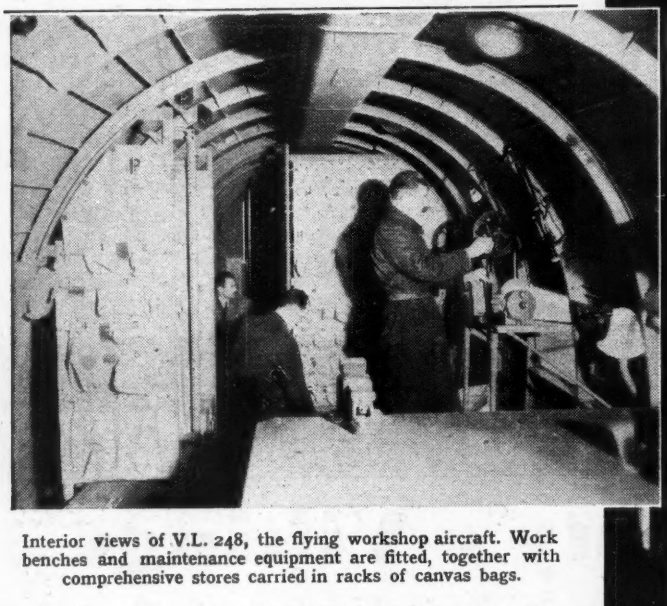
Structurally the aircraft are, with sundry small exceptions, standard Vikings in which especial interior furnishing arrangements have been carried out. In place of the light alloy fuel tanks normally fitted to Viking aircraft all four King's Flight machines are equipped with bag-type crash-proof fuel tanks, those forward of the main spar additionally incorporating self-sealing protection. The usual nacelle fuel tanks have been deleted, although the oil tanks are retained in the nacelles, these too, being afforded crash-proof protection.

In order that, in the event of a crash landing the occupants of the seats shall be afforded every protection, the rearward facing seats have been stressed to accom-



Rear stateroom looking forward, showing wardrobes on bulkhead and seats incorporating Chair-chutes.

HIS MAJESTY'S VIKINGS



Interior views of V.L. 248, the flying workshop aircraft. Work benches and maintenance equipment are fitted, together with comprehensive stores carried in racks of canvas bags.

modate an acceleration of 25 g. Forward facing seats are similarly stressed to cope with 12 g since, unless the occupant is provided with a head-band or some such device to prevent the head from going forward, accelerations in excess of this cannot be withstood.

In this connection it is interesting to learn that the human body is flexible enough to survive such ill-treatment. On the structural side of the question, such stressing of the chairs necessitated quite considerable strengthening of the transverse beams on which the floor is carried.

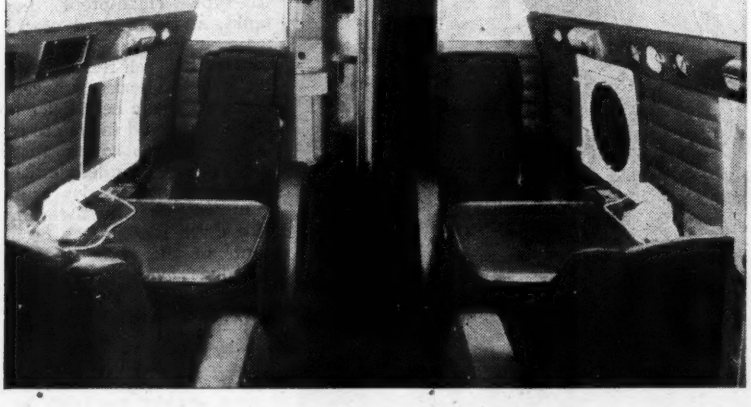
In addition to lap and shoulder-strap harness, the seats also incorporate Irvin chair-chutes; this being the first time that this new safety development has been used in civil aircraft. Chair-chutes are provided for every seat other than those occupied by the navigator and radio operator. These two officers have small swivel-chairs which could not well be adapted to incorporate fitted parachutes, and instead they will each be provided with the orthodox observer's type parachute pack.

Flight Command

Each aircraft is governed by a commodore, from whom the pilot takes his instructions, and who, in turn, is under the immediate command of the Captain of the King's Flight, A. Cdre. Fielden, himself the commodore of the King's personal aircraft. In the two Royal aircraft, the commodore's office is on the port side between the forward stateroom and the flight deck.

Both staterooms are alike fitted with four armchairs, and both the Royal machines are identically decorated in an attractive scheme of blue and beige. The main entrance is behind the after stateroom to port, and rearward of the entry vestibule is a three-seat compartment for two security officers and a footman/steward.

Radio equipment carried in each of the four Vikings is respectively: (i) Command R/T; (ii) VHF TR 1430 very high frequency air-to-ground communication; (iii) MFHF Marconi 1154/55 lower frequencies air-to-ground communication; (iv) Radio compass; and (v) Radio altimeter. Radar equipment included comprises, (a) Gee Mk II for obtaining "fixes" over selected areas; (b) Loran—a long-range variant of Gee—which will be used alternatively with (a) as necessary; and (c) Rebecca Mk III for providing a "homing beam" in connection with beam approach when near-



Rear stateroom of Royal aircraft looking aft and showing access doors to toilet and main entry vestibule. Accommodation for security officers is provided rearward of the vestibule.

HIS MAJESTY'S VIKINGS

ing a landing area. These items of equipment, together with the demands of what can be called the "domestic" side of the aircraft, have necessitated an enlarged and comprehensive electrical system incorporating two 6-kilowatt generators to handle the greater loadings.

Whilst on the subject of communications we might note the employment of a "house-phone" system in the two Royal aircraft—a unique feature. Between each pair of facing seats is fitted a telephone connected to the switchboard in the commodore's office; thus by depressing the appropriate switches any combination of the phones can be connected and one person may thereby talk to any other person, or persons, without anyone having to leave their seat. In addition, the commodore has intercomm. for communication with the flight-deck, galley, security officers, and the other aircraft of the flight.

The staff machine is to all intents and purposes a standard 21-seater Viking although sundry modifications are incorporated for the additional equipment carried.

The fourth aircraft is virtually a flying maintenance unit, the interior being equipped with canvas-bag racks for small-part stores, and work-benches fitted with vices, drills, grinders, etc. In addition, a Ben compressor unit and a Daganite starter trolley are carried, together with such bulky spares as a main undercarriage wheel and tyre, two tailwheels, oil cooler, etc. Four standard Viking seats are provided to starboard at the rear of the flight deck for the maintenance crew, and the commodore's station is opposite them on the port side of the fuselage.

The commodore's seat in his own cabin showing the harness loops of the Irvin Chairchute. In use the arms are slipped through the loops, a clip is fastened across the breast and a quick-action lap strap is secured. On the occupant standing up, the chute container is automatically withdrawn from the back of the chair.

THESEUS TYPE TESTED

NEWS reaches us as we go to press, of another important milestone reached in the development of the Bristol Theseus airscrew-turbine. This is the successful completion of a full official type test of 127 hours' scheduled duration. Not only is this an achievement for the Theseus, but for airscrew-driving gas turbines as a class. No other airscrew-turbine in the world has passed such a type test to date.

It will be remembered that the maximum sea-level static output of the Theseus is at present 1,950 b.h.p. + 500 lb jet thrust. During the cruising periods of the recent test considerably greater effective powers were taken from the engine than those which will normally be used at altitude, and for the next type test the take-off power is also to be stepped up, the aim being to maintain about 2,200 equivalent horse power, a figure already achieved during calibrations.

The engine used for type test was not fitted with a heat exchanger, a unique feature of the Theseus for medium and long-range operation.

Some interesting details are contained in the report on the type test by the Bristol Aeroplane Company, extracts from which are as follows:

The running of the engine was entirely satisfactory throughout the test, and the total elapsed time during which the engine was on the test stand only exceeded the scheduled testing time by five hours. No maintenance work was required at any time.

The majority of engine components were untouched for a total of 156 hours' running time, and two burners removed towards the end of the test to check the fuel spray pattern were found to be perfect.

The only part of the engine changed during the type test was one igniter plug which had been used during development runs prior to the test and had completed 136 hours.

The combustion chambers were examined externally after each ten hours' running, but no ill effects were observed.

For the whole type test the engine was supported by its normal overhung mounting structure as in an aircraft, and it drove a flight type airscrew. The absence of vibration at all speeds and powers was unprecedented.

The strip inspection of the engine after test revealed very satisfactory internal condition, outstanding features being the very small amount of combustion-chamber distortion, and the excellent state of the epicyclic spur-type reduction gears.

The Bristol Company emphasize that this test is one of a series to build up a comprehensive background of experience. A unit with heat exchanger will be subjected to type test in due course, and the flight test programme is expected to begin very shortly, the installation of two Theseus engines in the outboard positions on a Lincoln being well advanced.

PRIVATE FLYING IN NORWAY

THE Oslo Flying Club has recommenced activities with Mr. Bernt Balchen, the managing director of D.N.L., as president, and Lt. Andvik as secretary. The club has a landing field at Nordmarka, just outside Oslo. It is intended that this club shall be the centre for private-owner flying in Norway, and aircraft (fifty Taylorcraft are understood to be on order) will be distributed to other districts to assist in the formation of more flying centres.

INTERNAL SERVICES FOR S. AFRICA

THE South African Minister of Transport some time ago asked companies in South Africa to tender for internal air services within the Union of South Africa and the mandated territory of South West Africa. The Aircraft Operating Company of Africa floated a public company and named it Union Airlines to tender for these internal services, and application has been made for the whole of the Union as an area. The total annual mileage would be in the order of over 2½ million.

The aim of the company would be to start the services with D.H. Rapides, which are, of course, already being used by Central African Airways and East African Airways for similar air services, and later to replace and augment the fleet with Mergansers.

The feeder services' policy would be to connect with the main centres all those places not already served by South African Airways. In addition, it is proposed to run special longer-distance services such as direct flights to the south coast and to the Northern and Eastern Transvaal. Direct flights from the capital to such places as Bloemfontein and Durban are also suggested.

K.L.M. MAINTENANCE

ON January 6th K.L.M. opened a new engine maintenance workshop at Schiphol Airport. The workshop, which covers an area of some 7,000 square feet, has been built and equipped with modern machinery in a very short time to replace the technical facilities which were completely destroyed by the retreating Germans. When K.L.M. resumed operations, a small garage in Amsterdam was converted into a temporary engine shop, where with improvised equipment the engines were overhauled.

American Newsletter

Outstanding Flights in 1946 : Timing Troubles at Record Attempt : Comparative British Efforts

By "KIBITZER"

AS if to show aviation everywhere what it had to live up to in the New Year, the U.S. Army Air Forces released, early in January, a list described as "its ten outstanding achievements in combat aviation for 1946." (In the U.S. the word combat denotes military aviation as opposed to civil.) If this included one or two rather unexpected feats, it also omitted several performances which seemed good enough to have earned a place, such as the Lockheed P-80 coast-to-coast record, which was noteworthy for the endurance achieved, and the fine flights of the long-range Boeing B-29 *Dreamboat*. The latter, however, were probably omitted because of the Navy's capture of the long-distance record with their Lockheed *Neptune*. The list was as follows, and is quoted *in extenso* from the *New York Times*:—

1. The new American speed record of 611 miles an hour set by the XP-84, a jet fighter.
2. Development of the Republic XF-12, a four-engined flying photographic laboratory.
3. The flight, on May 17, of the A.A.F.'s first jet-propelled bomber, the Douglas XB-43.
4. Development of the "Flying Ram," a flying wing type plane built by Northrop.
5. Development of the Consolidated-Vultee B-13, or flying jeep.
6. The first flight of the XB-35 Northrop flying wing super-bomber.
7. First test flight of the Consolidated-Vultee B-36 super-bomber.
8. Development of the General Electric and Allison J-35 jet engine.
9. Development of the world's largest reciprocating engine. It has 5,000 horsepower at take-off, which is equivalent to the power of a railway locomotive.
10. The first flight of the Bell XS-1, a rocket-propelled plane designed by the A.A.F. to fly 1,700 miles an hour.

(Item number 8 of the above list appears to contain an error of omission. The J-35 engine is the same as the Westinghouse TG-180 so presumably it should be separated from the word "Allison" by the word "and.")

Most of these items have, at one time or another, been the subject of discussion in this letter, but their inclusion in the category of "outstanding achievements" justifies further comment. It now seems to be an established fact that the Republic XP-84 came very near to getting the speed record. It apparently made the requisite number of runs over the course at a speed which should have captured the record as it then stood, only to be deprived of possible success because the timing cameras had failed to function. When these were put right, further runs failed because of engine troubles, and the attempts had to be abandoned.

The development of the XF-12 by the same manufacturer, although by no means confined to 1947, is also worthy of inclusion. This is generally regarded as an outstanding design, but is better known under its civilian name of the Republic "Rainbow." The original specification for the photographic prototype, however, was placed by the Air Force in 1944 or thereabouts.

As far as the Douglas XB-43 is concerned, nothing much more has been heard of this machine since its first flights —nor of its stable mate, the XB-42. This latter aircraft, built as a test machine for certain of the XB-43 aerodynamic innovations (and because the hoped-for jet units were not then sufficiently developed) was really the most interesting of the two. Unfortunately it seems, when it crashed, to have descended into that aeronautical limbo where so many interesting and brilliant designs finish up, merely because they never get into production. (An interesting place that limbo, and one which would soon disillusion a designer who thought he was full of new ideas !)

As to number 4 on the list it must be confessed that the Northrop "Flying Ram" is somewhat of a mystery. During the war this company had a prone-position, rocket-powered, swept-back-wing, single-seater research aircraft, so presumably the "Flying Ram" is a ram-jet development of this, but whatever it is, very little has been said about it. When talking of Northrop, however, it is the XB-35 that the writer considers to be the outstanding aerodynamic development of 1946. Perhaps time will show it to be outstanding not only of 1946, but of many years. Great credit must be paid to the Army for backing, and to Northrops for building, this machine.

The inclusion of item number 5 is also rather a mystery, but for another reason. From what little is known about the Consolidated Vultee L-13, and it may well have features of which one is ignorant, it doesn't seem to measure up to the company it keeps. It cannot represent any great advance in performance or speed range over similar Liason types, and if it is included because of structural merit, or ease of repair and maintenance, it seems doubtful if it can surpass the Martin-Baker designs in this respect. Anyway, it brings a homely touch to the list and gives the Consolidated Vultee Corporation two candidates for annual honours!

This company's second mention, the B-36, certainly deserves inclusion. It represents not only the heaviest aircraft in the world yet to fly, but a degree of planning which was both far-sighted and imaginative. Even if there are those who say that modern warfare has rendered this machine somewhat out of date (and there is no proof that it is), it is still a very fine effort indeed, and worthy of its place.

★ ★ ★

Turning from aircraft to aircraft engines, a recent newsletter pointed out that the U.S.A.A.F. had, quite understandably, been rather upset by suggestions that they were two years behind Great Britain in the development of the jet engine. The inclusion, therefore, of the General Electric and Allison jet engines in this list probably represents a natural desire to restore the prestige of the American manufacturers and of American development of this type of power unit in the mind of the public. The fact that such designs originated outside the States is, unfortunately, not as widely known here as it should be, but it might be argued with some reason that due acknowledgement of this fact has already been made by the presentation of the 1946 Guggenheim Medal to Air Commodore Frank Whittle. On the other hand, the TG-180 (or J-35) built by Westinghouse is an axial-flow engine of small diameter, and has been developed over here right from the start and is proving a reliable and very compact unit.

As far as the Lycoming 5,000 h.p. reciprocating engine is concerned, it is difficult to work up much excitement over its production. It does undoubtedly represent a great deal of research, design, and development work, but its practical application to the modern aircraft seems problematical.

The power-driven flights of the XS-1 have already been touched on in these columns. In view of the very wise decision to attempt only limited speeds at first, however, its inclusion reminds one of the remark of an Arab chieftain who, when seeing an aircraft for the first time and being

AMERICAN NEWSLETTER

asked if he wasn't impressed, replied "No, why should I be, it's meant to do that, isn't it?"

So much for the U.S.A.A.F. claims, which, even if some of them do look a little thin in retrospect, are nevertheless a pretty progressive collection. But it is always easy to be critical of the other fellow's work, and much more difficult to be productive oneself, and in case any of the foregoing sounds like sour grapes or seems to be unduly critical (which it is not meant to be), it might be fair and honest to try to give a list of ten British outstanding achievements in military aviation, for 1946, and see how they compare. Obviously everyone will be able to agree on some four or five performances or developments which should have a mention, but thereafter the choice becomes increasingly difficult and controversial; so much so that the writer is not prepared to try to supply more than half the required number! These are:—

1. The Gloster Meteor world speed record of 616 m.p.h.
2. The North Pole flight of the *Aries*.
3. The development of the D.H. 108.
4. The general development and the increased time between overhauls of the Rolls-Royce and de Havilland jet engines.
5. The development of the airscrew-turbine engines by Rolls, Bristol, Armstrong Siddeley and other British engine manufacturers.

As for the rest, I am sure the Editor will be prepared to accept suggestions in the correspondence columns!

Belfair in the Air

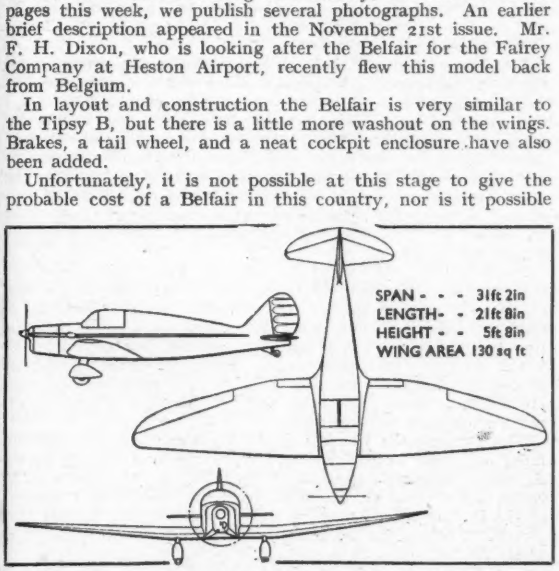
Sports Two-seater Revived : High Performance plus Economy

BEFORE the war Tipsy aircraft were being built under licence in small numbers in this country, and a little open-cockpit, single-seater, and a side-by-side twin had become very popular. The Belgian designer, M. E. O. Tips, is the general manager of the Belgian Fairey Company and his latest design, called the Belfair, is an improved version of the pre-war Tipsy B. The British Tipsy Aircraft Co., Ltd., is still, as in wartime, engaged on aircraft sub-contract work.

Last week *Flight* took the opportunity to examine and fly the Belfair which is visiting this country, and on the centre pages this week, we publish several photographs. An earlier brief description appeared in the November 21st issue. Mr. F. H. Dixon, who is looking after the Belfair for the Fairey Company at Heston Airport, recently flew this model back from Belgium.

In layout and construction the Belfair is very similar to the Tipsy B, but there is a little more washout on the wings. Brakes, a tail wheel, and a neat cockpit enclosure have also been added.

Unfortunately, it is not possible at this stage to give the probable cost of a Belfair in this country, nor is it possible



to say when, or it, one could be delivered from Belgium.

The fast revving little 62 h.p. Walter Mikron engine is also in a class not at present produced here, so that no British engine could be substituted to simplify import problems.

Performance figures quoted below are very much the same as for the earlier Tipsy B, but it seems that, if anything, the Belfair can do rather better. Rate of climb is probably nearer 600 ft/min. Maximum speed is about 110 m.p.h. and comfortable cruising speed at 2,450 r.p.m. is about 100. The manufacturers give 2,550 as cruising r.p.m. but the engine is smoother and quieter running 100 r.p.m. slower.

Impressions formed when flying the Belfair are that it handles very well indeed and that the performance on only 62 h.p. is extremely good. The controls are light but positive and well harmonized, and the elevators remain very effective right down to the stall. If need be, the control surfaces could probably be reduced in size. Mr. Dixon's remark that the Tipsy has almost the feel of a little Spitfire is quite true; The immediate and positive response, the sensitive elevator controls and true-to-textbook effect of all controls, is reminicent of early Merlin Spitfires.

There was a fairly strong and steady wind blowing at the time of *Flight's* test but, making allowances, the short runs required for take-off and landing were impressive, and the climb was excellent. A "taxy" position for the brakes and differential rudder effect made taxying simple. A parking position is also provided for the brake lever.

Visibility in the air and on the ground is good, and in level flight the nose seems well down. Approach and landing attitudes are quite natural and the springing on the fairly rough frozen grassy surface at Heston was satisfactory and comfortable.

Best speeds for climb and approach seemed to be 62 m.p.h. and 53 m.p.h. respectively, and flying solo, 46 m.p.h. was quite sufficient speed over the hedge. At 37 m.p.h. with engine off the controls begin to warn of the approaching stall and at 34 m.p.h. the left wing begins to drop slowly. Recovery from the stall is immediate.

Small air brakes are provided for the approach but their effect is not very pronounced and the two-position operating lever for the left hand is distinctly hard to move. An elevator trimmer is provided but it does not seem to be an essential. All the usual light plane instruments are fitted, and two sets of rudder pedals are provided. The stick is placed centrally and the throttle and mixture controls are on the left-hand side.

The good performance on 62 h.p. is the result of low weight and a clean exterior aerodynamically. Power loading is 17.8 lb/h.p. A consumption figure of 35 m.p.g. at 100 m.p.h. is one to make the sports car owner envious, and for solo delivery flights with extra tanks in the cabin the maximum range could, as claimed, be increased to 1,250 miles.

Some austerity is to be expected, but the seats are quite comfortable and with the passenger placed a little to the rear of the pilot "elbow room" is just sufficient. The cockpit enclosure folds over neatly but leaves very little head room and requires some lining at the joints. A small folding footrest is provided for the passenger as an alternative to the rudder pedals.

To conform with British C. of A. requirements the Belfair would need modifications to the tail surfaces. Like the original Belgian Model B it has split elevators and quite considerable redesign would be required to produce them as a single unit. However, on the British-built B this was successfully accomplished and it is understood that c.g. limits were improved by a slight alteration to wing position. The Belfair structure is very sturdy and is approved for aerobatics.

It is to be hoped that this sporting little two-seater will soon become available in this country. M. A. S.

TIPSY BELFAIR DATA
62 h.p. Walter Mikron

Weights	
Weight Empty	500 lb
Normal Full Load	1,100 lb
Wing Loading	8.5 lb/sq ft
Power Loading	17.8 lb/h.p.
Performance	
Cruising Speed	100 m.p.h.
Stalling Speed	37 m.p.h.
Rate of Climb	500 ft/min
Take-off Run	85 yd
Landing Run	60 yd
Normal Range (13.2 gal)	465 miles
Consumption	35 m.p.g.

CIVIL AVIATION NEWS

S. Pacific Air Transport Council's Meeting : New Ulster Company

FLAGSHIP : The B.O.A.C. Tudor I "Elizabeth of England" flying to London Airport for the christening by H.R.H. Princess Elizabeth on Tuesday, January 21st.

FUTURE PROSPECTS

TO say that there was a certain gloom at Portsmouth last Friday evening might perhaps create a false impression of what was, in fact, an interesting discussion. The Portsmouth Branch of the Royal Aeronautical Society had arranged a discussion on the future prospects for civil air transport, and had invited as the opening speakers Sir Frederick Handley Page, who is President of the R.Ae.S.; Mr. N. E. Rowe, Director of Research in the B.E.A.C.; and Mr. W. Tye, Chief Surveyor (design) to the Air Registration Board.

At the end of the evening many felt that there was little to look forward to in British or international civil aviation during the next five years or so. As in so many other recent public declarations, the three speakers stressed the need for safety, but they had little to offer as practical suggestions or in outstanding developments. Sir Frederick Handley Page struck a note which might well be remembered by many during the present adolescence of air transport operation: civil aviation must not be over-sold. There is too great an emphasis being placed on the necessity for speed, and, consequently, there is greater progress in that direction than in the other many requirements. Cheaper travel must also be one of the great aims of civil flying, but, as Sir Frederick pointed out, it must be gained by cuts in the cost of operation and not in the cost of manufacture of aircraft. Mr. Tye contributed to these arguments by reference to accident statistics which, he said, showed that the aircraft were seldom to blame for crashes. Most accidents were caused by deficiencies in equipment or to human error. It was a question, however, whether aircraft of the future—in fact, those that are at the moment on the drawing board—would maintain that standard. One of the difficulties experienced by the Air Registration Board in preparing airworthiness standards for the future was that, whereas developments in engine design were normally forecastable, rapid developments in aircraft construction and design were not.

Mr. Rowe concerned himself mainly with the long-term choice of future types of aircraft. Selection was made difficult by the lack of operating data, for the pre-war figures were unreliable and present conditions in Europe made it almost impossible to forecast the future requirements. International airport organization, for example, must largely affect the size of aircraft and overloaded terminals would cause bottlenecks. Airlines must, therefore, have diverse types of aircraft to cope with this possible overcrowding, but there must be a minimum number of types, otherwise difficulties would arise in maintenance, pilot-training and traffic organization.

Mr. Rowe felt that much of the future of air transport depended upon the flexibility of movement that it would provide in the future. This, he claimed, could only be obtained by frequency, which would enable the public to fly on a railway ticket arrangement instead of by pre-reservation of seats. We must not forget, he said, the connection between journey time and frequency; that is, the shorter the journey the higher the frequency demanded.

Two types of aircraft which were specially mentioned by Mr. Rowe were helicopters and special cargo carriers. The former he considered to be in their infancy, and in any case, with a future only where their unique qualities were essential to the task. Rather than develop helicopter services from airports to cities, Mr. Rowe thought it was better at this stage to develop efficient surface transport. Air cargo carriers, as distinct from passenger aircraft carrying freight, would need to be economical in operation, robust, cheap to maintain, and capable of carrying various types of cargo in all climates and at all heights.

Mr. Tye considered that, owing to the re-equipment of air operating companies, the present stage in the development of flying aids, and the shortage of aircrews, the safety factor was at a low level. He felt, however, that time would improve the situation. The future trend in technical developments would be efforts to speed up the retraction of undercarriages and the feathering of airscrews, and to improve the pilot's rudder control. Mr. Tye is a great advocate of passengers sitting with their backs to the direction of travel from the point of view of additional support to the body in the event of a crash.

Summing-up, Sir Frederick Handley Page referred to the disadvantage at which this country found itself at the end of the war, owing to the concentration on the building of military aircraft. The country's effort for that period, he was quite sure, was not fully appreciated, for during those years of effort Great Britain was losing experience and time in the manufacture and operation of civil transport aircraft. He still considered, however, that the greatest improvements must come from the operators.

The Portsmouth Branch of the Society must be congratulated on organizing such a successful meeting and on giving it such excellent support. The Mayor of Portsmouth, Councillor Winnicott, attended, and Mr. Townsley, President of the Portsmouth Branch, presided. It was unfortunate that Mr. E. C. Green, the chairman, owing to illness was unable to attend.

N.C.A.C.C.

THE first meeting of the National Civil Aviation Consultative Council was due to take place on Monday last at 3 p.m. at the Ministry. Normally the Council will meet in private, but, on this occasion, the Press were invited to attend.

The proceedings cannot be recorded in this issue of *Flight*, but it is known that the agenda included an opening statement by the chairman, Lord Nathan; an explanation by Sir Henry Self of the working machinery of civil aviation, and details of some typical civil aviation problems by the vice-chairman, Mr. Lindgren. There was, of course, to be a general discussion on all the items. It will be remembered that the Council has been appointed by the Minister to enable him to consult with representatives of bodies interested in civil aviation.

The Minister can alter or enlarge its membership, change its terms of reference or end its activities altogether. It is, therefore, quite distinct from the Air Transport Advisory Council, which is a statutory, independent, quasi-judicial body to be established by Order in Council.

ELIZABETH OF ENGLAND

H.R.H. PRINCESS ELIZABETH, at London Airport on January 21st, christened the flagship of B.O.A.C.'s fleet of Avro Tudor Is. The aircraft was named *Elizabeth of England*, and the rest of the fleet will be given names associated with the Tudor period. The ceremony of christening was performed by the Princess pouring champagne on to the nose of the aircraft. This procedure may possibly establish a precedent for the christening of aircraft. The custom of breaking a bottle of wine on the bows of a ship originates in the idea of a libation to the gods, which, in the strict classical tradition, is the ceremonial pouring of wine. Lord Knollys, chairman of B.O.A.C., in inviting the Princess to name the aircraft, made reference to the personal interest shown by Her Royal Highness in air development by her Mastership of the Guild of Air Pilots and Navigators.

ULSTER CHARTER COMPANY

LORD LONDONDERRY has formed the Londonderry Air Charter Company, which will undertake all forms of passenger and freight charter flying. This is the first air transport company to operate in Ulster, and headquarters have been established at Newtownards Airport. It is intended to build up a fleet of aircraft consisting of a number of Aerovans, Consuls and Geminis. For short-range charter work the company will use a Messenger, a Falcon and a Hornet.

Lord Londonderry has, of course, been associated with aviation for many years, especially in Northern Ireland, and in 1934 opened Newtownards Airport for civil flying. It is now a first-class airport, with a reputation for good weather. The manager of the company is W/C. T. W. T. McComb, O.B.E., an Ulsterman, who commanded two Coastal Command squadrons during the war, and later a Transport Command Liberator squadron engaged in ferrying troops to and from India.

ARABIAN AIR SURVEY

A DE HAVILLAND Rapide belonging to Hunting Aerosurveys left Croydon last week for the Persian Gulf. The aircraft is carrying the main part of an expedition to survey a large area of Arabia for one of the oil companies, a task which will take three to four months. The Rapide has been modified for work in extremes of heat and cold, the survey cameras being enclosed in a glass dome which will protect them from variations in temperature between the ground heat and the cold air at operational flying heights.

SOUTH PACIFIC COUNCIL

SEVERAL changes will probably be made in the organization of the trans-Tasman and trans-Pacific air services as a direct result of the first meeting of the South Pacific Air Transport Council, which was held in Canberra last month.

The United Kingdom, Australia, New Zealand and Fiji were represented by delegates, and an observer from Canada was present. Since the meeting in Wellington of the Commonwealth Air Transport Council early in 1946, Australia has negotiated two agreements providing for Pacific services. One agreement with Canada enabled the first direct air-mail service between Canada and Australia to be started. The second was with the U.S.A. The Council approved a draft directive by the Governments of the U.K., Australia, and New Zealand to British Commonwealth Pacific Airlines for the conduct of the trans-Pacific air service. This directive provides for three flights in each direction every fortnight between Australia and North America, and one flight each fortnight between New Zealand and North America. Subject to the approval of the Governments, however, the company may increase or decrease the frequency as required.

The Council also considered a draft contract between B.C.P.A. and Australian National Airways, under which the latter agreed to operate an interim service on behalf of B.C.P.A. The Council also considered a proposal for the readjustment of the financial structure of Tasman Empire Airways to provide for a greater proportion of holdings by New Zealand and Australia, with a corresponding reduction in the United Kingdom's proportion.

Other machinery which was recommended included an inter-Government agreement for the establishment of B.C.P.A., and two standing committees to be constituted under the South Pacific Air Transport Council, the Trans-Pacific Committee and the Trans-Tasman Committee to supervise the running of the two services.

The location in Fiji of the permanent international airport was not decided, but the Council recommended that further detailed surveys of the sites at Nandi and Nausori should be made as early as possible. In the meantime Nandi will continue to be used for the trans-Pacific services. The Council were of the opinion that the position with regard to regional services in the South West Pacific was so uncertain that no progress could be made at present.

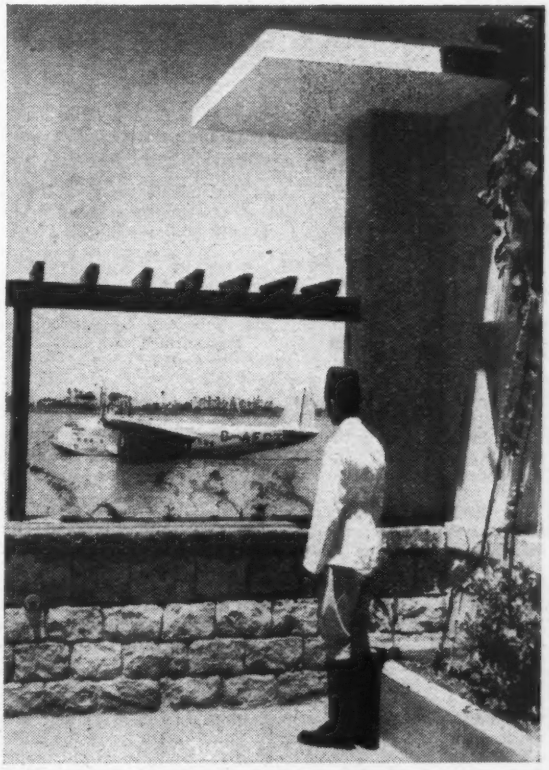
A South Pacific route service manual incorporating a route guide has been produced. The manual contains details of operating procedure, air traffic control arrangements, meteorological facilities, communications and instrument-approach charts to the international airports in the region. The New Zealand delegation told the committee that steps had been taken to have the manual approved by the Civil Aeronautics Administration. The Council will probably recommend that the manual be put into effect early this year.

SWEDISH AIRCRAFT FOR ETHIOPIA

A S.A.A.B. Safir ordered by the Duke of Harrar was recently flown from the S.A.A.B. Company's works at Linköping, Sweden, to Addis Ababa. Five aircraft of the same type which have been ordered by the Ethiopian Air Force have also been flown to Addis Ababa to be used for training purposes at the Ethiopian Air Force base at Bishoftu. The Safir is a low-wing three-seater monoplane with a retractable tricycle undercarriage and a D.H. Gipsy Major engine. Like most S.A.A.B. aircraft, it is of stressed-skin construction. The wing span is 34ft 9in. The cruising speed is given as 127 m.p.h., and maximum speed 146 m.p.h. Production is believed to be well under way.

R/T TRAINING

AT Dorval Airport, Montreal, the B.O.A.C. base for North Atlantic operations, a system for perfecting R/T conversation has been added to the synthetic training establishment. The apparatus, known as the Mirrophone, records the voices of both the pilot and the instructor during practice blind approaches and landings on the Link trainer. The normal standard air traffic control and approach procedure is strictly observed in these practices, in which conversation between the ground controller and the pilot is reduced to a minimum. After the practices the apparatus is switched on to play back on a loudspeaker the recorded conversation. The pilot under



SHORT SHADOWS: A B.O.A.C. flying-boat laying to the tide at her moorings at Rod-el-Farag, the flying-boat base on the river Nile near Cairo. The photograph was taken from the passenger-reception building.

CIVIL AVIATION NEWS

instruction is then able to hear for himself the mistakes in procedure, and intonation, and make adjustments to the pitch of his voice to assure clear reception in the control tower. This apparatus will undoubtedly be useful for practising G.C.A. also, for although there is no regular procedure for this blind-approach aid, it is essential that the pilot responds to instructions and limits his own conversation to those occasions when response is necessary.

BREVITIES

Pan American Airways completed 93 per cent of the scheduled transatlantic operations for 1946, despite the grounding of the Constellations for six weeks. Sixty thousand passengers were carried both ways, three times as many as in 1945.

* * *

Equipped with additional built-in petrol tanks, a specially converted K.L.M. Dakota has left Schiphol for Curaçao to assist in the extensive aerial photographic survey now being made in the Netherlands West Indies; two other aircraft will be flown out in the course of the next few weeks. This is the first post-war aerial photographic survey undertaken by the Photo-Technical Division of K.L.M.

* * *

Pan American Airways have announced that a weekly service from New York to Ankara through London will be started on January 31st. The overall time will be twenty-five hours over the 5,600 miles. The aircraft will return the day after arrival in Ankara, and fly non-stop again, to London.

* * *

G/C. Arthur Franklin has been appointed to the Colonial Service as Director of Civil Aviation in Palestine.

* * *

Vikings are now in operation with Indian National Airways flying one of the two daily services between Delhi and Calcutta. The departure is from Delhi at 8.30 a.m., arriving Calcutta 12.20 p.m. The return schedule leaves Calcutta at 1.30 p.m. and arrives at Delhi at 5.20 in the evening. The daily Dakota service is via Cawnpore and Allahabad.

* * *

Air India have announced a new service in Southern India between Madras, Bangalore, Cochin and Trivandrum, to be run three times a week; it is hoped to step it up to a daily service in due course. This air route will be particularly useful in view of the absence of fast surface transport communications in this part of India.

* * *

Following the visit of the K.L.M. pilot selection board to Canada last month, sixty-two Canadian pilots will be joining the company within the next three months. Many of the recruits have been drawn from the R.C.A.F. Ferry and Transport Commands.

* * *

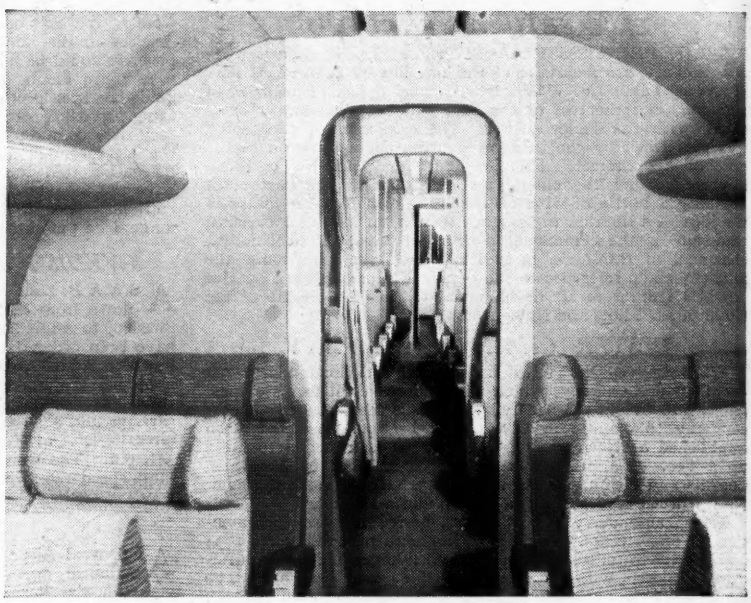
Mr. R. L. Carter, general manager and secretary of Isle of Man Air Services since 1937, has been appointed the Isle of Man area manager for British European Airways.

* * *

The Swedish Riksdag has passed a Bill authorizing the construction of a large airport capable of accommodating the largest types of modern aircraft at Halnsjön, thirty miles north of Stockholm. Preparatory work is already in progress, and it is hoped to complete the airport in five years. The estimated cost is nearly six million pounds.

* * *

Scandinavian Airlines, which were established about five months ago, have now increased regular flights across the North Atlantic to four a week in each direction. It is understood that services to South America, at present one every fortnight, will be increased in March to one a week. At the same time the company hope to start four-week tourist trips to South America, stopping at Buenos Aires, Rio de Janeiro and the other main cities.



AMERICAN ADAPTATION: The interior of the Republic XF12 high-altitude photographic reconnaissance aircraft which, of course, in civilian form is known as the Rainbow. American Airlines have ordered twenty of these very fast transports.

FROM THE CLUBS

The Yorkshire Aeroplane Club was re-formed in April, 1946, at Sherburn-in-Elmet. The club has been granted the use of the premises vacated by No. 4 A.T.A. Ferry Pool, and a portion of the landing ground, which includes a 2,000-yard runway. Two Auster Autocrats have been in use since last April, and a Tiger Moth and an Auster I are being overhauled in time for flying in the spring. Some thirty members have obtained or renewed "A" licences, and 810 hours were flown during 1946. The clubhouse has been renovated and refurnished and a resident steward and staff have been appointed, so that full club facilities are now available.

* * *

Owing to flying restrictions which were imposed in the area of Salisbury, the Wiltshire School of Flying and the Flying Club, the Royal Artillery Flying Club, the Royal Air Force Netheravon Flying Club and the Parachute Regiment Flying Club moved, on Saturday, January 25th, from High Post Airfield, Salisbury, to High Post, Thruxton Airfield, Andover. This airfield is three and a half miles west of Andover on the main Andover-Amesbury road. The official opening is to be on April 5th, but there will be an unofficial house-warming on Saturday, February 15th, when all members and friends will be welcome. The new clubhouse at Thruxton includes a dining room with full catering licence and bar, and sleeping accommodation will be available early in the spring. Seventy-three octane fuel will be on sale, and there is ample hangar accommodation.

* * *

The Midland Gliding Club have decided to hold three high-performance instruction camps, each lasting nine days, during the forthcoming season. The camps will be open to approved "C" pilots, approved and experienced aircraft pilots, and to private owners of high-efficiency sailplanes. The proposed dates for the camps are from May 24th to June 1st, August 2nd to August 10th, and September 13th to September 21st, all inclusive. The fee fixed for accommodation, food and use of the club's single seater machines, and for dual instruction when necessary, is £12 12s, and for private owners £6 9s plus 2s 6d for each launch whether by winch or bungy. Each camp will have to be limited to fifteen, and each application will be subject to the approval of the C.F.I. A two-guinea reservation fee is required with the application, which will be returned to the applicant if refused admission to the camp. The club fleet will consist of two tutors, two Kites and a high-efficiency two-seater. Those interested in the camps or club membership should make enquiries from F. G. Batty, 2, Lombard Street, West Bromwich. During the past year the club has flown over 700 hours and made over 2,000 launches.

CORRESPONDENCE

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.

THE FIRST V1

When and Where Did It Fall ?

I WAS a little surprised to read in the article "Behind the Scenes" (*Flight*, January 16th), which was a write-up of the Cabinet Chief-of-Staff Committee report on "Certain Phases of the War," that "the first V1 arrived over England on the night of June 12-13, 1944." I agree that this was the date upon which the offensive began, but was under the impression that at least one "sighting shot" was previously fired.

Circumstantial evidence, available to the layman, would indicate that the "reconnaissance machine" which crashed with flames coming from its tail at Park Gate, between Southampton and Portsmouth, at least one month, and probably more, before D-Day was a V1. Anti-aircraft fire was weak, and before defensive action was taken the machine appeared to be suffering from engine trouble. Subsequent V1s falling in the area passed over or near Park Gate. Moreover, the explosion at the scene of the crash was of V1 proportions.

I submit, therefore, that this was at least one of the first V1s to fall on England. It may be that other readers have similar evidence of "sighting shots." SOTONIAN.

VERY ODD ODE

Nothing New in Propaganda

HAVING read the article on statistics and the harm they can cause, I thought this other sort of anti-aviation propaganda might interest you. It was obviously issued by the "Railway Interests" to be instilled in the Minds of the Very Young, and was published in 1829, the year when Stephenson's *Rocket* achieved its great success.

Here is an excerpt from "The Mothers Fables," 5th edition, and being couched in the metre since made famous by Cyril Fletcher, I call it "Odd Ode No. 3," coming up!

"While round about the Skylark sung,
A partridge there had rear'd her young,
And being of her children vain
She loved to see them in her train.
The eldest, stronger than the rest,
Was often straying from the nest,
At length, assisted by the breeze,
He's borne aloft above the trees.
The breeze is brisk, as brisk can be;
But now it sinks, and so does he,
Now reach the place where, almost dying,
He mourns his self-conceit in flying.
For my presumption now you see,
What sad misfortune's come on me;
Do you my pride and folly shun,
And be content awhile to run."

Incidentally, I still have the original. O. GRUGEON.

PILOTS LICENCES

Flying Condition the Vital Factor

AIR CONTRACTORS, LTD.'S, commercial manager in his excusable enthusiasm for the abilities of his firm's Aerovans (*Flight*, Jan. 16th) failed to read my letter (Jan. 2nd) completely, for I particularly stressed the two to three seat light aircraft as the type so widely used in "taxi-piloting"—types such as the Auster, Proctor, Messenger, Gemini, and the old die-hards, the Tiger and Hornet Moths.

These aircraft perform essentially the same duties whilst operating as club aircraft as they would if used as aerial taxis; namely, local and cross-country flights of short duration in conditions favourable for contact flight; radio and "Fido" aids both are of little importance to these trips, or their operators, for if such weather as required these aids were imminent, the customer and operator would both elect to travel by other means over the relatively short distances involved.

Flying such as I quote goes on each and every suitable day, in privately owned aircraft such as flocked to White Waltham on September 28th, 1946, to show their paces, and in chartered aircraft hired by business men and women who recognize that travelling by air is the pleasant way of covering a hundred miles cleanly and quickly, without bustle, hustle and timetable worries.

These people are the air-minded folk who would know when conditions were unfavourable for flight; who recognize the need for adequate traffic control and aids to flight that such conditions require; the people who, by their criticism and support, will further the safety of civil aviation.

More freedom to cater for these air-minded types will increase their numbers. Competition is the best stimulant for enterprise, and I fail to see that such a matter as the hire of a small, light aircraft for a trip essentially no more hazardous or complicated than a club flight needs a licence so elaborately different. If the "A" licensed pilot is to be entrusted with the safety of a passenger and the inhabitants of every hamlet his flight path crosses, I have still to be convinced that the same journey is affected merely because his passenger is paying a fee and himself earning a living in the best way he knows. Isn't he more likely to be even more careful with his customer than when impressing a pretty friend? "474."

LAYMAN'S LAMENT

A Poetic Plea for Less Speed

When carriages without a team
Were static, and the day of steam
Was just beginning, learned men
Would speak of Stevenson, and then
Say "20 m.p.h.? The pace
Is much too great. Downright disgrace.
Man cannot stand it. Wait and see."

And thus, as man's velocity
Increased, the wise ones duly upped
The speed at which one must disrupt
(N.B.—The figures which they gave
Were in convenient hundreds, save
In early days of speeding, when
They mounted only ten by ten).
This practice was continued till
Quite recently; and one can still
Observe it: but, some years ago,
When others than those in the know
Were wont to gaze in wonderment
At Gloster's kite with anal vent
A subtle change was brought about;
It was the layman's turn to spout
"Men can't fly faster than—(he'd quote
Some arbitrary figure; note,
In thousands now, the numbers ran).

Perversely, scientists began
Refuting all suggestions that
There was a limit to the bat
At which a body could survive.
They said you could remain alive
Regardless, if you'd only learn
That g depends on rate of turn
Times V, or some such; they decreed—
"Do not, on any score, exceed,
Say, No. per minute, lest
Acceleration (awful pest)
Impair your frame at certain points.
For instance, both the elbow joints
Might come undone, just for a start;
The body, limbs, and head would part:
The blood congealing (if you please)
In solid lumps about the knees.
Apart from this, its quite all right
To emulate the speed of light.
But bear in mind the what and why
Of friction. Mind that you don't fry."

And so I make this solemn plea:
Bring back the days (at least for me)
When mighty king-pins, pundits wise,
Were loath to let the limits rise
And even if we turn up late
Preserve us from this dreadful fate!

PETER HILL,
Late R.N.V.R. (A).

Royal Air Force and Naval Aviation News and Announcements

ACCESSORIES TO MATCH : The D.H. Vampire FI (Goblin II) with the latest refinements, those visible being the bubble canopy and cleanly faired auxiliary tanks. Mr. John Cunningham is the pilot.

SERVICE AVIATION

Awards

THE King has been graciously pleased to approve the following awards:

ROYAL AUSTRALIAN AIR FORCE.

O.B.E.

W/C. Reginald Henry Davis, R.A.A.F.

M.B.E.

F/L. Walter Grandison, R.A.A.F.

D.F.M.

Sgt. Keith Richard Burrill (now W/O.), R.A.A.F.

B.E.M.

Sgt. Eric Heyward Haines, R.A.A.F.

Air Support in India

SOUTH-EAST of Peshawar, in arid, mountainous country, large numbers of troops, vehicles and aircraft have been engaged on manœuvres. For the first time in India the Group Control Centre was tried out, all aircraft being under the direct control of the Centre while airborne. New methods of air support were tested, with special reference to the use of the Group Control Centre, and modern forms of air supply, giving the ground forces greater mobility in allowing them to travel light over difficult terrain, were tried out.

The Brigades taking part—the 20th and 25th—were dependent on air supply for food, water and petrol.

Dakotas from Nos. 10 and 62 Squadrons of India Command, commanded by W/C. A. S. Ogilvie and W/C. R. D. Boughan, dropped these supplies by parachute as and when requested by the military commanders on the spot. Only a month previously these squadrons were engaged in flying supplies of food grain to areas in East Bengal. Heavy air support was given by Halifaxes of No. 298 Squadron (W/C. W. G. Gardiner). Formation bombing from 3,000ft on a target west of the Jungrai pass was accurate and effective, and was a fine demonstration of the squadron's prowess before its disbandment.

Royal Indian Air Force squadrons also played a prominent role in the battle. No. 2 Squadron (S/L. M. Rabb), and No. 7 (S/L. M. L. Misra), both based at Kohat, were engaged on reconnaissance, strafing, and rocket firing at a target on the mountain-side east of Jungrai pass. No. 9 R.I.A.F. Squadron (S/L. M. Ashtar), based at Peshawar, similarly gave support to advancing troops and was also engaged in the rocket attacks, with the Tempests of Nos. 5 and 152 Squadrons in support. Air evacuation of "casualties" was carried out by No. 659 Squadron using Austers from a specially prepared airstrip.

The conduct of air operations was delegated to the A.O.C. No. 1 Indian Group, A. Cdre. F. Long, C.B., acting in conjunction with G/C. A. J. Bigger, officer commanding No. 229 Group.

Education Director on Tour

AIR CDRE. A. H. ROBSON, Director of Educational Services in the R.A.F., left by air on January 22nd on a tour of R.A.F Stations in India and the Far East.

Distinguished Visitors

THREE officers of the U.S. Army Air Force arrived in a York from Paris at Bovingdon on January 21st for a six-day visit to the Royal Air Force. They were Major-General Curtis Lemay, Deputy Chief of the Air Staff (Research and Development) ; Major-General Earl E. Partridge, Assistant Chief of the Air Staff (Operations) ; and Colonel Munroe McClosky, Chief of Reserve, National Guard Division. They called upon the Chief of Air Staff, Lord Tedder, and members of the Air Staff, and were the guests of the Air Council at a reception.

A.A.F. Appointment

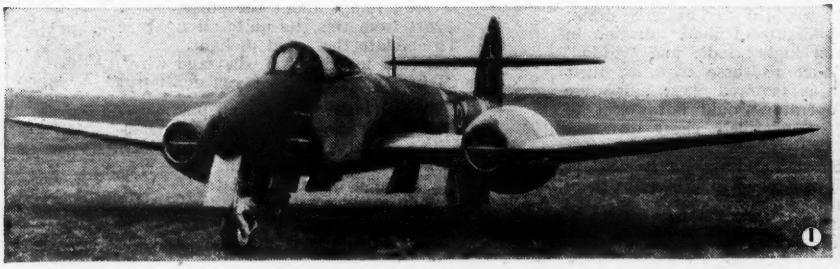
THE Air Ministry has approved the appointment of the Rt. Hon. Lord Sherwood of Calverton as Honorary Air Commodore of No. 504 (County of Nottingham) Squadron, Auxiliary Air Force.

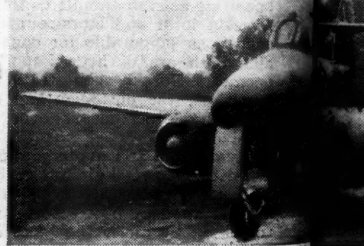
Lord Sherwood was at one time the Commanding Officer of the Squadron, and is a former Under-Secretary of State for Air. As Honorary Air Commodore he succeeds the Rt. Hon. Lord Mottistone, P.C., C.B., C.M.G., D.S.O.

U.S. of S. on Tour

A TOUR of Overseas Commands of the R.A.F. is being made by the Under-Secretary of State for Air, Mr. Geoffrey de Freitas, M.P., the objects being to note the accommodation and amenities provided, to see what improvements have been or should be made, to talk informally to airmen, and to visit specialized trades sections, such as those concerned with radar and electrics.

The Under-Secretary of State, who left this country on January 15th, accompanied by his personal secretary and W/C. P. Burnett, D.S.O., D.F.C., who is acting as his personal air secretary, will, during his six-weeks' tour, see the





conditions under which airmen are serving in the Mediterranean and Middle East, in India and the Far East, in Japan with the British Commonwealth Occupation Forces and in Africa.

Among the places that have been or are to be visited are Athens, Habbaniya, Shaibah, Karachi, Delhi, Calcutta, Aden, Nairobi, Bulawayo, Khartoum and Abu Sueir, from which a tour of stations in Palestine will be arranged by the Air Officer Commanding-in-Chief, Mediterranean and Middle East.

The party is due back in this country on March 6th.

Engine Maintenance in Australia

AIR MARSHAL SIR GEORGE C. PIRIE, A.O.C.-in-C., Far East, has stated in Melbourne that an agreement would shortly be reached with the Commonwealth authorities for the R.A.F. in South-East Asia to send a monthly quota of aero-engines to Australia for overhaul. It was more economical in every way to undertake these overhauls in Australia than in U.K.

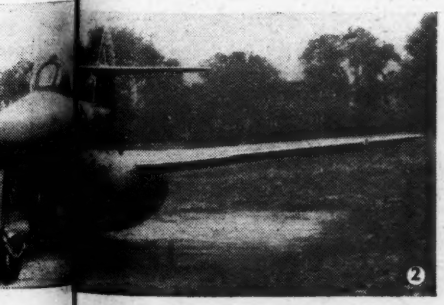
The arrangement provides the R.A.F. in the Far East with an alternative source of supply and a valuable insurance in case lines of communication with U.K. should ever be cut again. Air Marshal Pirie, who has been conferring with Air Marshal George Jones, Chief of Australian Air Staff, has now returned to his Singapore H.Q.

"Coastal" Takes Soundings

PHOTOGRAPHS taken from Coastal Command aircraft are being used to determine the depth of water around the coasts of Europe. Existing charts of some portions of coastline are unreliable, but by the new method of charting they can be quickly rectified.

Simultaneous vertical air photographs are taken on panchromatic film by two cameras, one fitted with a red and the other with a green filter. By comparing the two, interpreters can state the depth of the water at any point to within three feet, so long as some point of known depth is shown on one of the run of photographs. The reason for this exact interpretation is that coastal sea-water has a maximum transparency for green light and a considerably reduced trans-

GENESIS: The main variants of the Gloster Meteor: (1) F.9/40 with Power Jets or Halford units; (2) F.9/40 with Metrovick axials; (3) Meteor III with Rolls-Royce Welands; (4) Meteor with Trents; (5) Meteor IV with Derwent Vs; (6) Trent-Meteor with small-diameter airscrews; (7) the speed-record Mark IV; (8) Mark IV with reduced span.



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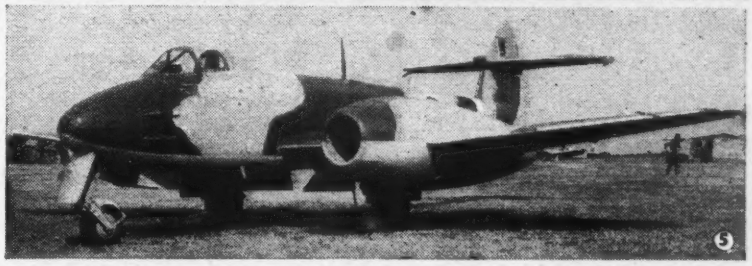

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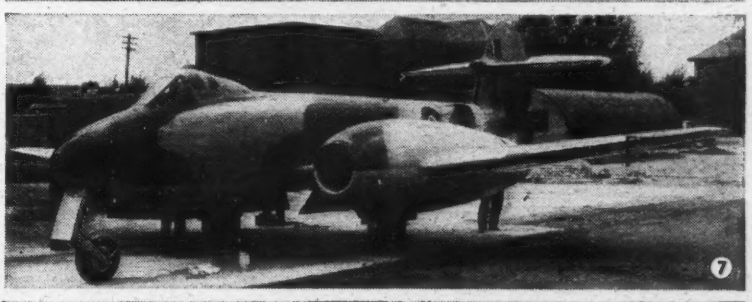

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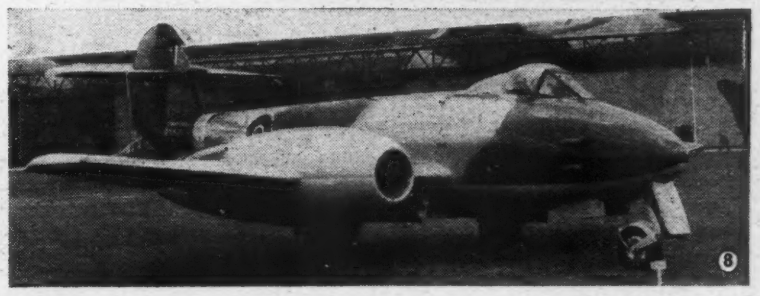


8

SERVICE AVIATION

parency for red light. Objects below the water, therefore, appear much darker with the red than with the green filter.

Infra-red film is also used to ascertain the exact position of the high-water mark. On normal panchromatic film shallow water is often very difficult to detect on an air photograph, but by the use of infra-red film and filters the water is rendered black on the print and the water-mark is thus easy to trace.

R.A.F. Sport

A DIRECTOR of R.A.F. Sport has been appointed by the R.A.F. Sports Board. The appointment is a non-public one, and the holder is paid partly out of the Board's revenue; it has, however, been agreed, subject to review at the end of a year, that the Director will also act as R.A.F. Inspector of Recreational Grounds.

The first holder of the post is W/C. J. Lawson, O.B.E., known throughout the Service as honorary secretary of the R.A.F. Rugby Union for twenty-one years and as honorary secretary of the R.A.F. Sports Board until his retirement at the end of 1945.

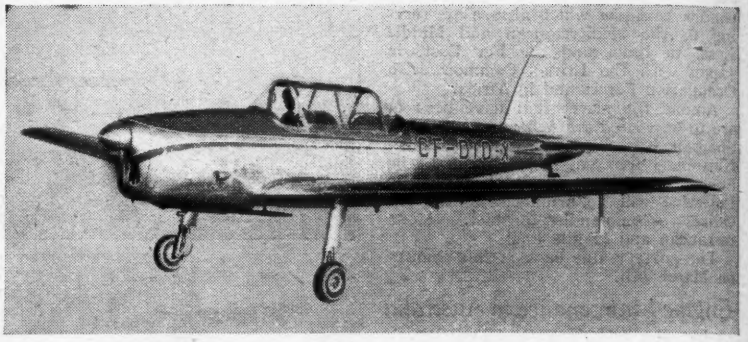
Improvements of stands and grounds are being considered by the Board. Most forms of sport are now strongly represented in the R.A.F., and in addition to Association football (the favourite game of the Service), there is an R.A.F. Rugby Union, Golfing Society, and Yacht Club. Also in existence are associations for athletics, cross-country running, boxing, cricket, fencing, hockey, lawn tennis, squash rackets, rifle and revolver shooting and swimming.

The secretary and treasurer of the R.A.F. Sports Board, who will work in conjunction with the new Director of R.A.F. Sport, is W/C. A. F. Ingram, recently retired from the active list, who is well known in the Service as a hockey player, fencer and boxer. Marshal of the R.A.F. Lord Tedder, Chief of the Air Staff, is the President of the Board.

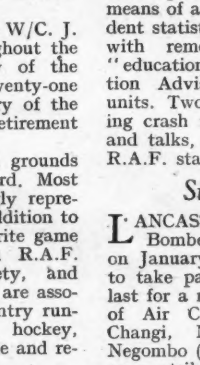
Accident-Prevention Change

AIR CDRE. A. C. H. SHARP, D.S.O., A.F.C., has relinquished his post at the Air Ministry as Director of Accident Prevention, and has been appointed as the representative of the Air Member for Supply and Organization (Air Marshal Sir Leslie Hollinghurst, K.B.E., C.B., D.F.C.) on the newly formed Manpower Economy Committee, which has been set up to consider the best use that can be made of the reduced manpower in all branches of the R.A.F. The opportunity has been taken of reducing the directorate to a deputy-directorate under a Group Captain, and the officer selected to direct the future work of accident prevention is G/C. A. F. Anderson, D.S.O., D.F.C., who for the past year has been one of the two deputy-directors under A. Cdre. Sharp. (A photograph of G/C. Anderson appears on page 115.)

A more compact organization, the new deputy-directorate, is in two main sections. The first deals with policy, accident reporting and investigation, and, by means of a coding system, prepares accident statistics. The second is concerned with remedial measures and safety "education." Visiting Accident Prevention Advisers maintain contact with units. Two travelling exhibitions, including crash relics and provision for films and talks, are now going the rounds of R.A.F. stations.



CHIP OF THE OLD BLOCK: The popularity of the D.H. Tiger Moth before, during and and since the war may eventually be rivalled by that of the Canadian-built Chipmunk an example of which is now in this country.



Badge of No. 131 Squadron, R.A.F.—"Invicta" (Unconquered).

Singapore Exercise

LANCASTERS of No. 7 Squadron, Bomber Command, R.A.F., arrived on January 16th at Changi, Singapore, to take part in an exercise which will last for a month and embrace the whole of Air Command, Far East. From Changi, Mingaladon (Rangoon) and Negombo (Ceylon), the squadron will fly as a striking force on day and night sorties over Burma, Borneo, Malaya and Ceylon. Crews will be briefed for mock attacks on a variety of targets, and the operation will be known as "Red Lion."

Targets on Singapore Island will include the naval base at Seletar with its floating dock, Singapore dockyard and the Empire dock, the Causeway and Changi airfield. Prior to each sortie, ground crews will prepare the aircraft as if for wartime operational flying: the machines will be fully bombed-up and armed.

En route to objectives, they will bomb and strafe smoke floats and marine markers placed at specified sea positions. Their briefed targets will be "bombed" photographically. Combined naval and R.A.F. exercises, high- and low-level interception and escort practices, together with demonstration and training flights, made in conjunction with local fighter squadrons, will be included in the month's programme.

Commanding the flight is W/C. C. N. Fleming, D.F.C., Officer Commanding No. 7 Squadron. He was met on arrival by A.V-M. J. D. Breakey, C.B., D.F.C., the acting A.O.C.-in-C., Far East, in the absence of Air Marshal Sir George Pirie.

Escort for "Vanguard"

FIGHTER and Coastal Commands will provide an air escort for H.M.S. *Vanguard* when she leaves Portsmouth on February 1st for South Africa, bearing Their Majesties the King and Queen. Mosquito and Spitfire fighters will provide continuous escort after *Vanguard* passes the Nab Tower, off Spithead, and Meteors and Vampires will fly past if weather permits. After an hour escort duties will be taken over by Mosquitos, Beaufighters and Sunderlands of Coastal Command.

The aircraft will be drawn from ten squadrons and will be controlled and co-ordinated by arrangement between No. 11 Group, Fighter Command, and No. 19 Group, Coastal Command.

W.A.A.F. Officers' Branches Reorganized

WHILE preparations are proceeding for the permanent peacetime Women's Auxiliary Air Force Service, the branches open to W.A.A.F. officers under the Extended Service Scheme have been reviewed. A Secretarial branch—on the same lines as for the R.A.F.—will be introduced later and will absorb the existing Accountant branch and some sub-branches of Administrative and Special Duties.

Others which will be merged into the post-war branches are: Intelligence, Photographic, Code and Cypher, Operations, Filter, Personnel Selection and W.A.A.F. (G).

Officers re-engaging in these duties are required to certify their willingness to transfer at some future date. The Intelligence and Photographic Interpretation sections are open for limited numbers only.

The following branches are closed to Extended Service: Administrative and Special Duties (M.T.), Photography, Psychiatrist, Radar Supervisor, Radar, Signals, and Meteorology. Officers belonging to these branches or sub-branches will be accepted for Extended Service if they are suitable for training for other duties.

Reunions

ALL interested in a reunion dinner of No. 619 Squadron should immediately contact P. S. Osborne, c/o A. R. Heathcote and Co., Ltd., Bernard Works, Sheffield, 1.

* * *

IT is proposed to hold a reunion of No 600 Squadron, A.A.F., in London during March. Those interested should communicate with Frank Yates, 9, Greenwood Gardens, London, N.13.